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HYGEIA

A JOURNAL OF INDIVIDUAL AND COMMUNITY HEALTH

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"The maternal death rate in the United States has increased rather than decreased." Not until adequate care is given the American mother for months before her child is born will this rate be reduced appreciably, and not until then will the United States have just reason to pride itself on its care of women and children. In this paper Dr. Reed gives facts that should be known not only to mothers and prospective mothers, but also to all adults.

Before and When the Baby Comes

CHARLES B. REED

EVERY child has an inalienable right to be well born and to start life with adequate physical and mental equipment. Before it first gazes on the external world and while borne by its mother, it is entirely dependent on her for its development and for its nutrition through her blood circulation.

If then the mother lives in such a manner as to promote her own health, if she gets enough sleep and exercise, eats sensibly of simple foods and sees to it that her digestive organs are in good condition, she can be reasonably sure that her child will build up a healthy body and a normal brain. If, however, she neglects the rules of good living, either from ignorance or indifference, her baby may be robbed of its ability to grow. Even when the baby is spared permanent disability, it may still be puny, delicate, and nervous in after life from lack of proper nourishment during the period before its birth.

Medical Care Before the Baby Comes

Every woman should consult her physician as soon as the possibility that she is to have a child is suspected. She does this not only to establish the fact, but also to provide for the successful growth of the child. Nor should any woman be deterred from consultation by modesty or lack of funds. Every physician and every hospital has facilities for meeting these emergencies. It is a privilege to surround our women, both rich and poor, with all the protection that medical science and social progress can offer. They need not and should not suffer through the antiquity of childbearing.

It is unhappily a fact that while a woman may eat properly, exercise regularly, and

protect herself intelligently from injury during pregnancy, she may, nevertheless, be exposed to such complaints as trouble with digestion, cramps and enlarged veins, heart disease, and disturbances of the kidneys. The conditions of modern life have increased the dangers of childbearing. In every pregnancy the kidneys play an important part. They are the chief agents of excretion, and even good organs may be disturbed or broken down by the extraordinary demands made on them.

The Poisons of Pregnancy

The kidneys excrete largely the poisonous by-products of pregnancy. What is more natural, then, than the fact that in them the doctor first discovers symptoms of danger to life? The kidneys therefore must be watched carefully. Their work and their capacity to work properly should be estimated by monthly or semimonthly examinations of the urine throughout the period that the child is carried.

In speaking of the poisons of pregnancy, we are brought face to face with our ignorance. We do not know just exactly what these poisons are. We do know that the mother and child develop certain waste products that must be eliminated if disastrous consequences are to be avoided. These waste products act as poisons; while we are ignorant of their character, we are acquainted with their effects. We have not identified them, but we have learned to avert their evil activities. Since they are eliminated by the kidneys, they naturally produce injuries to these structures; they may cause permanent disability or death. In most cases the presence of the poison is marked by definite and easily observed signs, which are:

1. Serious and persistent vomiting and pains in the pit of the stomach.
2. Severe and repeated headaches.
3. Dizziness.
4. Swelling of feet, hands, and eyelids.
5. Neuralgia and muscular twitching.

The appearance of any of these symptoms usually indicates that the mother is carrying a dangerous quantity of poison in her system. Either she is manufacturing too much or she is getting rid of too little. She is on the verge of an attack of eclampsia, the name given to the convulsions of pregnancy. This disorder is so serious that one mother of four mothers who have it dies, while three of the four babies die. Therefore the wise mother and the wise doctor will not let nature conduct her reproductive affairs unwatched and uncorrected.

Danger of Miscarriage

In women who are apparently normal there is always danger of miscarriage, bleeding, and childbed fever. It is claimed that one of every four pregnancies results in miscarriage. The bond between the egg and the uterus does not become firm until the eighteenth week of pregnancy, and consequently up to this time miscarriage can easily occur. There are many causes that seem to bring about this mishap. Among them is hard work, such as the lifting of heavy burdens, washing and sweeping, and strenuous amusements that jolt or jar the body, such as dancing, skating, tennis, golf, and horseback or motor riding. Miscarriage not infrequently follows a fall. Sometimes the egg itself is diseased or insecurely attached to the uterine wall and therefore readily dislodged. Then, too, the mishap may occur, as it often does, in consequence of diseases such as syphilis, pneumonia, typhoid fever, tuberculosis, or appendicitis.

The signs of miscarriage are bleeding and pain; the dangers of miscarriage are bleeding and fever. A miscarriage is sometimes unavoidable, even when every precaution has been taken by the attending physician and the mother.

Control of Childbed Fever

Childbed fever is a wholly preventable disease. There is no such thing as "milk fever." The presence of a fever after childbirth, a temperature of 101 F. for more than twenty-four hours, is definite evidence of uncleanliness. Childbed fever is a filth disease, a disease of contamination.

The control of childbed fever is one of the great victories of science. One hundred years ago, from ten to twenty mothers of every hundred died of childbed fever, while at present it is so far possible to prevent this infection that in good hospitals not more than one in several thousand mothers is attacked. None the less we are distressed, as we well might be, to acknowledge that of all the mothers who die in childbed, 45 per cent. die from this preventable disease. If we add to this deplorable number the 25 per cent. who die from the poisons of pregnancy, we find with humiliation that 60 per cent. of all the deaths in childbirth are due to diseases that could be prevented by intelligent attendance.

But yet the blame for an unnecessarily large death rate cannot be looked for entirely in prenatal care or in its absence. Deaths from congenital weakness, from syphilis, as well as from injuries at birth, have not been appreciably diminished by this work. Care before childbirth has been valuable principally in reducing the number of cases of poisoning from the products of pregnancy.

If more mothers and babies are to be saved, we must develop a program for care before and adequate care during confinement.

Many a case of conscientious prenatal care has been nullified by indifferent attention during labor. The reasons for better obstetrics accumulate. The prospective mother should consult her physician early and often, and he should be competently trained in the care of prospective mothers. The physician should be the refuge and the strength of the mother. He must foresee the dangers of miscarriage and provide against them. If misfortune is inevitable, he must bear her safely through. He must measure her pelvis to see if she may safely have a child. He must measure her child and determine in advance whether labor is safe or possible, and what procedure, if any, will be required in an emergency. He must try to preserve the premature child. He must guard the mother from fever both before and after the birth of the baby and he must stand between that baby and blindness.

Blindness of Birth

The blindness resulting from infection at birth is a real and pressing danger. How real will be evident from the statement that nearly one third of all the blind who fill our institutions have lost their sight on account of indifferent or ignorant attention at birth. This blindness results from the introduction into the baby's eyes of the germ of gonorrhea. The story is simple. It has been estimated that in our large cities 80 per cent. of all the men have had gonorrhea one or more times. Half of these men communicate the disease to their wives. A child is born, the eyes become contaminated during birth, and the sight is destroyed. Is this blindness preventable? It is. One drop of a 1 per cent. solution of nitrate of silver placed in each eye when the child is delivered will destroy the germ and save the eyes. Incidentally the mother may also become a victim. Not infrequently the germ travels through her tissues and causes inflammatory changes. She becomes sterile. She can have no more children. She is often an invalid and may require operation after operation for relief. The danger to the mother from this germ can be best appreciated when it is realized that of all the infections peculiar to women one third are due to this germ, most of the remainder being the consequences of childbirth.

The Perils of Pregnancy

Thus the prospective mother not only has the perils inherent in her condition, but also may be confronted with diseases that, highly dangerous in themselves, add immensely to her hazards. Suppose, for instance, that pregnancy is complicated by abnormal position of the pelvic bones; suppose the mother has tuberculosis or cancer, gonorrhea or syphilis. The physician is the sole guardian of that woman. He throws about her all the advantages of his skill and experience in combating the ravages of disease. He cures the venereal diseases, prevents the occurrence of convulsions, minimizes the dangers of labor, and meets with calmness and success the threat of hemorrhage or infection.

These things can all be done. They are done.

Think of the waste, of the sorrow and suffering that indifference entails. "Disorders of flood or fire," says Mrs. Rich, "which destroy whole towns of less than ten thousand people, cause national alarm and call forth immediate measures for relief and prevention. America's mothers and America's babes lose their lives one by one in no such spectacular fashion and therefore fail to attract sympathetic attention or consistent and comprehensive relief." Are our babies so numerous or is childbirth so easy that we can afford so vital a loss? The facts are sufficiently distressing in the cold list of figures, but suppose the babies so ignorantly sacrificed are your babies or mine? This brings the situation closer to us and inspires a humane, or a selfish, desire to carry to the babe unborn some of the benefits of modern hygiene and medicine.

Let the childbearing woman be assured of every safeguard and let us see to it that no infant is deprived of its birthright of health. To "let nature take its course," has long had the authority of an oracle, but, like the oracle, it is untrustworthy and often dangerous.

"Take her upstairs and put on the light blue dress. . . . Did you ever see a child with so strong a will? She won't be fit to go if she gets to crying, and it's past time now."

How Nerves Go Bad

ROBERT S. CARROLL

"TAKE her upstairs and put on the light blue dress. I have reasoned with her till I am worn out. Did you ever see a child with so strong a will? She won't be fit to go if she gets to crying, and it's past time now. I've told her a dozen times that she looks prettier in the white embroidered dress with the wide sash, and that none of the other girls there will have silk dresses on—but do hurry."

Thus again Hortense Wendell, not yet seven, had come out first-best in a clash of wills with her elders. She had never yet been defeated, and, reasonably, she was accepting her opinions and desires as right, if not righteous. Already the richest opportunities that life had given her parents wholesomely to mold their child's future had passed, without a constructive touch.

Grandfather Wendell had been a sea-captain, and a wild rover he was. Not until time and much reckless living had saddened and sobered him did he take sufficient thought for the future to lay aside the thousands which in those days constituted the Wendell fortune. Of his children we shall record only the facts relating to Hortense's father. His early days oscillated between feast and famine, the result of his father's eccentric providing. But later he was enabled to attend the state university and graduate in law. And when the captain died there was enough for a Chestnut street stone-front, where he and his bride of fine family graciously ornamented Philadelphia society for years.

Mr. Wendell was truly a man of excellent parts and unquestionably merited the associate judgeship which politics finally awarded him. Mrs. Wendell was not weak save when in combat with her daughter. In fact, quite the contrary. She had a wilful way with her parents and her husband, and never brooked interference when her domestic or social mind was settled. Truth to tell, it would have been a caviling spirit which recognized the possibility of improving on Mrs. Wendell's decisions. But all her austerity and self-confidence and her unquestionable good judgment had been as chaff before the wishes and whims of her small daughter. Hortense was the only child, and therein lurked tragedy; had there been others, their various ways would have been so devious that Hortense

would occasionally have felt the rectifying tonic of denial. Like many another "good husband," the judge limited his expressions of authority to his judicial duties. Home to him was never to be a place of strife. Mrs. Wendell was entirely competent for the domestic situation. Both husband and wife were ambitious, reasonably so, the wordly-wise would declare. Their financial hold on the wealthily exclusive circle they affected was far from secure, so they both devoted their best graces to the precarious business of holding on. This may be a reason why Hortense's governess conferred often and at length with the mother about the daughter's dresses and shoes and hats. This, too, may explain why at six years the little miss believed that clothes were vital. And as her opinion had never failed to win respect in all past differences, there was not the slightest doubt (How could there be?) that her blue silk dress was the right one to wear that afternoon to Martha Morton's lawn-party. And it was not long before she was thus befittingly attired and serenely on her way.

The Child

Wiser parents would have found Hortense difficult, even in her very early years, for to her had been given the high art of persuasion. She was witchingly handsome, having the good looks which only fade when emptiness of soul begins to haunt the eyes. And to this was added sweetness of appeal which could stand several denials unruffled. Most winsomely she would respond to her mother's "I wish you wouldn't, Hortense" with happily confident eyes and smilingly dimpled face, and a charming "I wish Hortense would, mother dear" which was usually the beginning of the end—for her mother knew too well how inevitably the sparkle of sunshine would fade into sullen clouds to hang low through the lengthening hours till the original request was realized. Twice while Hortense was three her mother had followed Solomon's advice; she had actually hair-brushed her darling. No winsome appeals then, no hours of quiet, grieved and hurt feelings, but an explosion fairly vicious in its intensity, a blind, destructive, wrecking passion before which her mother was appalled and against which she feared to contend. And so it was to be through a long drag of years. The child, the girl, the woman, the wife, was to meet denial, first sweetly, then sullenly and, if necessary, viciously. The day her mother determined to control her, the child had already successfully had her way many hundred times, and while at three and during years after wholesome discipline could have protected this promising life and created a character of lasting worth, those early best days when mother-guidance is simply instituted were lost. In other ways Mrs. Wendell failed in her high duty to her daughter. While quite too conventionally refined to call her child's attention baldly to her fine eyes, unusual skin, symmetric features and dainty figure, she failed to check the repeated comments on these qualities that were made in the child's presence. Miss Willis, the governess, let few hours pass without some reference to her charge's physical attractions, her grace of action, becomingness of dress, charm, or brilliance of speech. Miss Willis must have realized that it was enjoyable to mother as well as daughter, though her own pride in the child cannot be questioned. This governess undoubtedly possessed in a rare degree a capacity for adjusting herself comfortably to her surroundings.

The sparkle of sunshine would fade into sullen clouds till the original request was realized.

The Young Girl

It is probable that conflict between mother and daughter would have been relatively rare through the years had Hortense's desires always been in accord with the conventions of her mother's circle. It is also probable that the family's social standing would have been hurt by Hortense's wilful choice of dresses and sundry other nonexclusive manifestations had it not been for her unquestioned charm and increasing good looks. Hortense never offended crudely, she just had her own way—her own way in food, and hours, in going to parties and giving parties, in staying in bed or playing tennis through the dinner hour, and, later, in choosing studies and in spending her vacations. Her life became more and more irregular. No one had ever made her do what she decided against, and an insidious weakness gradually rendered her incapable of commanding herself to any undesired effort or denial. She had been given an unusual physique, which, though indulgently fed and sporadically exercised, developed into apparent robustness. With unusual ability of hand, muscle, and mind, and a comfortable conscience, it would seem that she lorded life, even as she did the youths, callow and callous, whom she irresistibly attracted. Confidently her mother looked into her daughter's matrimonial future. Hortense could choose as she wished. But even at eighteen, when the Misses Claybrook, respected heads of the Park Place School for

Young Ladies, considerately granted her an unearned certificate of graduation, comfort had become the first law of her life.

Hortense weighed one hundred and forty that summer, but soon after her commencement complained of being "all worn out." She had studied too hard, her friends said, of course; and the doctor advised a summer in the Scotch Highlands—for a former generation saw health only in European terms. The prescription was justified, however, in this case, and by fall Hortense was ready for a season in Paris, radiantly ready physically, and eager for the richness Paris offered to her pleasure-loving nature.

Jordan Clark's father had made a mint of money in Cincinnati while Jordan himself had been away from home so long, receiving an eastern education, that he had quite outgrown any deficiencies that his early home training had created. Having graduated, there was no reason why he should not see the world, and he hied him to Paris. There was, apparently, no limit to his allowance, and so he became another gay young American in the gay metropolis. Had he met Hortense in a less artificial atmosphere, his good sense probably would have detected her defects. But, even in the midst of French beauties, her fine features, color, and figure impressed him as the most beautiful of all, and to find superlative beauty within his reach gratified something pertinent and youthful which he found himself thrilled in satisfying. "The daughter of Judge Wendell, too, a good family," and so it was a match! An exceptional one, Mrs. Wendell assured herself.

Hortense never offended crudely; she just had her own way—her own way in food, and hours, in going to parties and giving parties, in staying in bed or playing tennis through the dinner hour. . . .

The Wife

The young people returned to two homes, one on the Heights at Cincinnati, where the husband could attend his "business," and a west side apartment in New York, leased by the season. The bride's mother had been a most fastidious and capable domestic manager. It had always been the judge's pride to bring his friends to his home, for Mrs. Wendell entertained with an ability that produced effects quite above their means. Untrained in any detail of useful doing, Hortense had some conception of her responsibility to reproduce her mother's art, and she tried during their short seasons at home, those first years, to be a competent mistress. But within two years, when she was but twenty-three, her inadequacy manifested itself in a rapid loss of interest in her home life, with an unquestioned neglect of home responsibilities. In fact, she was restless and apathetic, and Europe was again prescribed. For six months she had a companion—the doctor had suggested it would be wiser for her not to be left alone—until at last she asked to return, and was her gay, attractive self again for several years. A trained housekeeper relieved her of housekeeping cares.

The Mother

At the age of twenty-seven a burden was laid upon Hortense, the first true test of her womanhood. But she had not willed it, and she rebelled. This time it was not fond mother or contention-avoiding husband who was to be moved by the sunshine of her smiles or chilled by the gray sullenness of sulking days, or one least bit affected by her destructive outbursts of rage. Against the laws of life these prevailed not, and through the long months she sinned in her soul as she hated the child that was to be. But the suffering, the first real physical pain she had ever known, which laid hold on her with God's relentless tenderness, purged the evil away, and Jordan Clark thought he saw the divinity of the Madonna as the beautiful mother pressed her son to her breast, with love-light as a halo about her face. How small an amount of the rectifying pain that her mother so inadequately applied might have purged away those early tendencies which, unchecked, were to grow into clanking balls and chains, fettering her soul!

All too short were the days of the love-light, for the little wayfarer tarried but a week, and again this woman faced the inscrutable, the inevitable, the impersonal; and for months, twenty damaging months, she railed at fate, she cursed her religion and her God. During these days there was no ray of sunshine; no smile nor cheer could touch her in the depres-

sion which she had created. Then in a week her vivacity returned; almost reckless she was, especially as she flaunted her unbelief in churches and rectors and religions; and from this time on she never had the mildly stabilizing influence of her early conventional religion to lead or deter her now almost wanton will. Gay and brilliant she undoubtedly was, and Jordan Clark soon found his home a salon for the almost giddy. There had been no adequate physical preparation to furnish reserve to meet this life of gayety, and within two years a cloud of suspicion, a suspicion which questioned mother and husband specially, put an end to the round of festivities. In six months the cloud lifted, only to settle again later for nearly a year, during which time she was haunted by doubts of the goodness of those who cherished her most.

Jordan Clark accepted his wife's manifest defects without comment, and throughout the years his relations with her showed exceptional finesse. Her beauty and unusual charm had won him; he early learned that these were dependent on her having her way and that when crossed she would become frigid and unapproachable; and under this he discovered a veritable hornets' nest if aggressive interference with her plans or moods was employed. So through the years he saw to it well that no act of his diverted the sunshine; his clubs, his committees, his "business" kept him away through the unpropitous days.

Pitiably narrowed is her horizon and hopelessly stunted is her soul.

The Young Matron

At thirty-three, Mrs. Jordan Clark made her social season in New York a brilliant success. Her remarkable beauty was in full bloom—the mists of suspicion were gone—and with apparently unlimited resources her entertainments were unquestionably triumphs of art. Then stocks went tumbling, and after several anxious months Jordan Clark had to tell his wife that their circumstances had fared badly, that he must really work to save the remnants. And be it said to his wife's honor that she met this as she had the pain of motherhood, and was chastened.

The New York apartment was given up, the home on the Heights leased, and for nearly three years they lived what, for them, was certainly a simple life—her only serious living; "our only happy married years," her husband afterward said. Undoubtedly for those months she forgot herself in her sympathy for him who stood in need of her sacrifice. She willed to give it, and gave it freely, and these days stand as a record of what her life might have been.

Jordan Clark had business ability, almost business genius, and in three years they were independent; the old round of entertaining and entertainments, as befitted their wealth, was resumed. At forty-three, the shadows again lengthened. For a time the wife was self-accusatory, childishly and absurdly so; still, for her, this was a most abnormal frame of mind. Her unhappiness deepened, and for two years and a half strange hands cared for the wretched woman.

The Middle-Aged Woman

This illness left Mrs. Clark permanently defective in any expressed or manifested effort at productive living. Beauty of body and mind have been dimmed and never returned. Fifteen years have passed. Through seven of these she has had to be cared for away from home. Of course, through these illnesses she has taken many forms of treatment, but nothing has ever been found that could restore the defect made possible by her inadequate home training in early childhood. The mother cowered before her child's wilfulness, mistaking strength of selfishness for strength of character. The daughter lives on, now past sixty, weirdly maintaining her good looks through the falsifications of artifice. The thinnest possible shell of good manners remains—those common to selfish conventions. Pitiably narrowed is her horizon and hopelessly stunted is her soul. Stripped of youth and brocades and jewels, dainty, winning, rarely promising Hortense Wendell is but a withered wreck. Life has presented its riches on a golden tray; of these she has chosen as first the way of her will, and to no human will has she ever sacrificed a jot. The powers above thwarted her desires; her suffering became a disintegrating force, bringing to her falseness, incurable emptiness, and spiritual ugliness.

Gas Poisoning and Methods of Resuscitation

HOWARD W. HAGGARD

CARBON monoxide is distinctly a product of modern civilization and of our urban type of living. This gas is rarely found free in nature, but there is hardly an industry or domestic art in which it does not occur. As a product of incomplete combustion we meet it at every turn of our daily life. That every one is not ultimately overcome by carbon monoxide is due to the fact that, unlike lead compounds, for example, it is not an accumulative poison. It is rather an asphyxiant like water. In occasional and small amounts it is quite as harmless.

The many daily newspaper reports of persons who have died from the effects of gas or been overcome by it in houses and garages make this paper particularly interesting and timely. The reasons for the deadliness and harmfulness of large and small amounts respectively of carbon monoxide gas are explained by Dr. Haggard, who is carrying on research work in the Laboratory of Applied Physiology, Yale University. The simplest means of reviving persons who have been made unconscious from the gas are also described.

Occurrence of Carbon Monoxide

Carbon monoxide is the principal toxic constituent of smoke and of coal or furnace gas. The city fireman who is so often overcome by smoke is in reality the victim of carbon monoxide produced by the incomplete combustion of the burning building. There are numerous examples of men becoming asphyxiated while working on smoke stacks. Occasionally, occupants of high buildings are overcome by smoke from neighboring chimneys blowing into their open windows. The amount of carbon monoxide in the flue gas of the domestic furnace varies with the depth of the bed of coal, the intensity of the draft, and the construction of the fire box. It is greatest at night when the fire is banked and the drafts closed. It may find its way into the dwelling by a back draft or through a cracked dome in a hot air heater, or by means of the pernicious practice of connecting two fire boxes to a common flue. Escaping coal gas, and that means carbon monoxide, has led to many cases of partial asphyxia and ill health of the occupants of houses with leaky furnaces. This is necessarily more true of those who sleep with the bedroom windows closed. The escape of carbon monoxide through a cracked fire dome in the furnace has been known to produce a partial asphyxia at night, accompanied by hallucinations which have been mistaken for spirit manifestations and resulted in the branding of more than one house as haunted.

Carbon monoxide, in not too great amounts, has a bad influence on the disposition and temper. A recent writer of large imagination has suggested this as an important cause of domestic infelicity. This author recommends an inspection of the heating device in the home before divorce proceedings have gone too far.

The charcoal brazier was long a popular means of suicide and a common factor in accidental deaths in Europe. To it was due the death of the famous Zola. It is, however, little used in this country; but its counterpart, the coke burning salamander, is employed in inside construction work. It is at times used without a flue and takes an occasional toll of life. It is a common cause of decreased efficiency among plasterers, plumbers, and others who work during the later stages of building operations, and particularly among those men on the scaffolding near the ceiling.

Dangers of Automobile Exhaust Gas

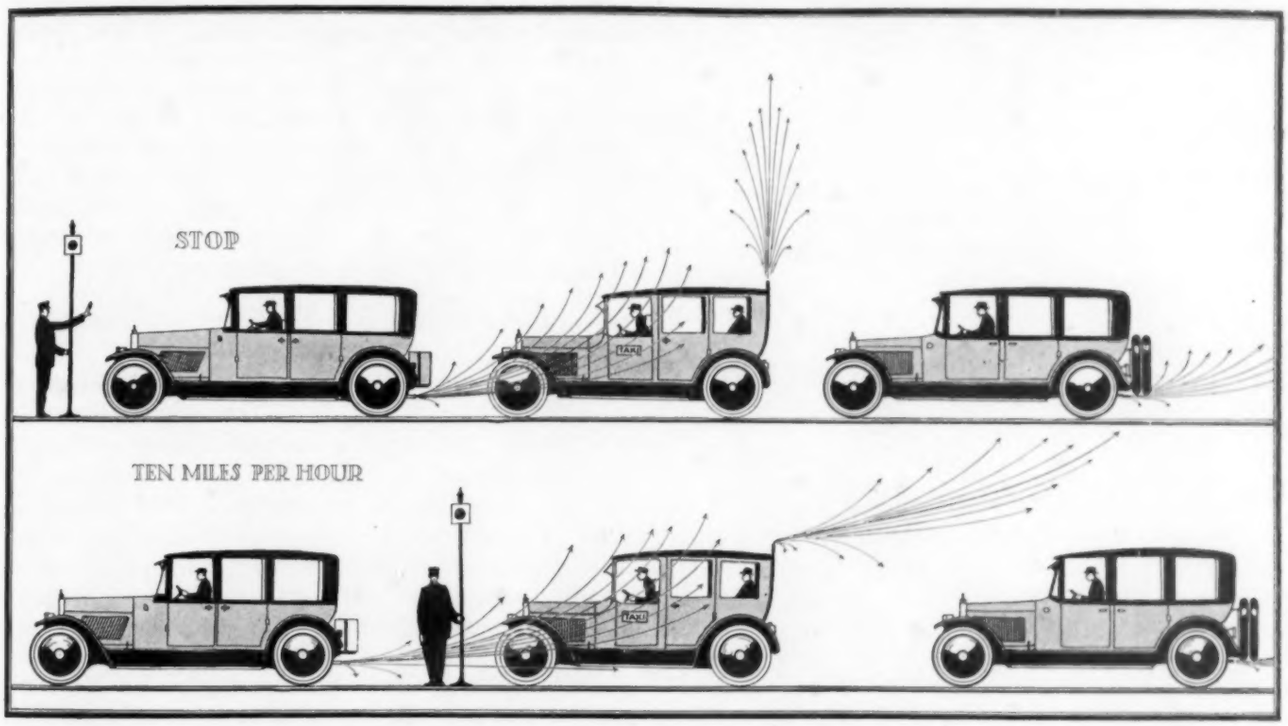
Our most recent and widely used conveyance, the automobile, is just beginning to receive recognition as a cause of carbon monoxide poisoning. This was brought out most clearly in the investigations to establish the ventilation standards for the Hudson vehicular tunnel. It was found that the exhaust gas when gasoline was the fuel contained only one toxic substance, which was carbon monoxide. The unburned gasoline did not contribute even appreciably to the toxicity of the mixture. It was found that the benzol gasoline mixtures now becoming popular involve a distinct and serious additional health hazard owing to the extreme toxicity of benzol. Automobile exhaust gas often contains 7 per cent. of carbon monoxide, and even twice as much when the engine is first started and is warming up on a rich mixture. This means with the average machine, under ordinary running conditions, a carbon monoxide production of from one to two cubic feet each minute. This large production of carbon monoxide involves a corresponding waste of fuel, for which the driver rather than the automobile engine is to be blamed. By suitable carbu-

reter adjustment the production of carbon monoxide can be brought to below 1 per cent., but, unfortunately, all drivers are inclined to set their carbureters for the maximum of power rather than for maximum of efficiency and sanitary safety. As a result of the tendency to use rich mixtures, about a third of the gasoline is wasted and a serious health hazard is occasioned. Deaths from poisoning by exhaust gas in private garages during the winter months furnish material for many newspaper items in the northern states. When the doors and windows are closed the concentration of carbon monoxide builds up rapidly to fatal proportions. This is not remarkable, however, when we consider that the inhalation of the undiluted exhaust for one minute would be fatal.

Motor exhaust gas is a serious health hazard in automobile repair shops. It kills few, but induces decreased efficiency and poor work, headaches, ill temper and discontent, and sometimes ill health. It is almost impossible to ventilate a large public garage adequately during the winter months even when only a few engines are running. A complete change of air every few minutes would be necessary to reduce the concentration of carbon monoxide to the harmless level of 0.01 per cent. This is due to the fact that all cars are now designed with the exhaust at a low level and horizontal. In our city streets with their congested automobile traffic the contamination of the air, with a large volume of exhaust gas almost at the street level, constitutes a hazard to the motorist and to the pedestrian alike.

Content of Illuminating Gas

In our cities illuminating gas is the most common source of carbon monoxide poisoning. The illuminating gas sold in America is higher in carbon monoxide than that sold in the metropolitan districts of England and many places on the Continent. There the gas was, until recently, made solely by the destructive distillation of coal, and contained only from 4 to 6 per cent. of carbon monoxide. In America the so-called fattened water gas is cheaper and satisfies the legal requirements as to British thermal units. The standards for luminosity are obsolete since the introduction of the mantle burners and the extensive use of gas for cooking. The public is quite as much interested in cheap gas as are the companies. The product now supplied is of variable composition and contains from 20 to 30 per cent. of carbon monoxide. As a result of this, the number of cases of gas poisoning in this country is many times as great as for the same unit of population in Europe, although there also the carbon monoxide content and resulting fatalities are increasing.



Exhaust gas from motors discharged from a pipe near the ground, as in most automobiles, is caught in the draft that follows a car and is expelled with force toward the oncoming car. The gas is lighter than air only when it is hot; when cooled by mixture with the street air it loses its tendency to rise and clings about the streets to be breathed by crowds of passers-by. The remedy for the resulting health hazard is one of the oldest and simplest of devices, namely, the "chimney," or as here adapted, an exhaust pipe extending vertically to a few inches above the top of the vehicle. Thus the gas would be hurled upward in a fairly compact mass and pass safely away like a puff of smoke.

Modern Means of Suicide

In the Borough of Manhattan in New York City there are annually about four hundred fatal cases of poisoning from illuminating gas. Of these approximately one hundred and fifty are recorded as suicides. The remaining are listed as accidental. It does not necessarily follow, however, that the gas companies alone are wholly or even chiefly responsible for this. Gas is quite the mode in suicide; and my personal observations lead me to believe that a large number of the cases listed as accidental are in reality suicidal. From social and religious motives, there is a tendency on the part of the friends and families of these unfortunates to cover up the evidence of suicide. This attitude is furthered by a well meant leniency on the part of the police who are the first to arrive on the scene. It is probable that at least 50 per cent., and perhaps even more, of all the deaths recorded as due to gas poisoning are suicidal. Many of the suicides accomplish their purpose by the only certain method. They insert in their mouths the tube from a portable gas appliance and breathe the undiluted gas. Under such circumstances it would matter little whether the American gas of high carbon monoxide content is used or the English gas of low carbon monoxide content. It is the availability of illuminating gas as a lethal agent which explains its use in spite of the extent of water front of Manhattan convenient for the now out-of-date method of suicide by drowning.

Danger of Some Gas Appliances

The majority of cases of accidental death from gas poisoning are due to neglect and carelessness on the part of the consumer in using flexible tube connections with rubber friction ends. Such tubes deteriorate, slip off, and leak. When this occurs they are more often than not repaired with a home-made patch of adhesive tape or the like.

The man who "blows out the gas" is not now common. There still remains, however, the man or woman who hangs wearing apparel upon the side wall gas fixture and in so doing opens the cock. This usually occurs in the small bathroom of an old house which has been electrified and from which the gas fixtures have not been removed. Under such circumstances gas asphyxia is frequently complicated by drowning.

Certain gas appliances are in themselves dangerous. Among them are the water-heating or room-heating devices without flues in which the gas flow comes into contact with a relatively cold surface. This results in the rapid cooling of the flame and the escape of unburned carbon monoxide, which may rise to more than appreciable amounts if the flame is close enough to the cooling surface to allow the inner cone to impinge. Even more carbon monoxide escapes if the flame is yellow from insufficient air, or has back fired and burns at the base of the fixture. The medical diagnosis of fatalities from this mode of poisoning are frequently inaccurate. The physician or even the coroner assumes that since the gas is still burning when the victim is found, death has been caused by the depletion of oxygen in the room caused by the combustion. This cannot occur. The human organism is able to live without great discomfort in an atmosphere in which the percentage of oxygen is too low to permit the combustion of gas. If, on the other hand, the oxygen is depleted to a level which does extinguish the flame, there is at once an escape of unignited gas; an unwarranted assumption of suicide may result. The quarter meter is a rather frequent cause of gas fatalities, as is also the thrifty boarding house keeper who turns off the gas at ten o'clock at night and turns it on again at six in the morning. On the whole, there are few accidental asphyxiations from illuminating gas which cannot be traced directly to the ignorance or carelessness of the consumer rather than to fault of the gas company.

Combination of Carbon Monoxide with Hemoglobin

Carbon monoxide has only one direct reaction in the body. That reaction is the ability of carbon monoxide to combine with the hemoglobin of the blood, the coloring matter of the red blood corpuscles. This combination is reversible and under suitable conditions the hemoglobin will give up its carbon monoxide and remain undamaged. There has been much controversy over the effects of carbon monoxide poisoning. It is now proved as completely as any scientific fact can be that all of the ill effects of carbon monoxide result from the temporary partial exclusion of oxygen from the body through the combination of the gas with hemoglobin. The normal function of the hemoglobin is to combine loosely with oxygen as the blood passes through the lungs and then to give up its oxygen as it is carried in the circulating blood to the deeper portions of the body, where the physiologic combustion takes place. In this combustion the carbon of the food which has been eaten and has been built into the tissues is burned in the muscles and other portions of the body much as carbon is burned for power in the industrial world. This combustion or oxidation never gives rise to any carbon monoxide. It is in all circumstances a complete combustion and results in the production of carbon dioxide.

The combustion of carbon from food by its union in the body with the oxygen brought by the hemoglobin of the blood gives rise to the manifestations of life, that is, energy

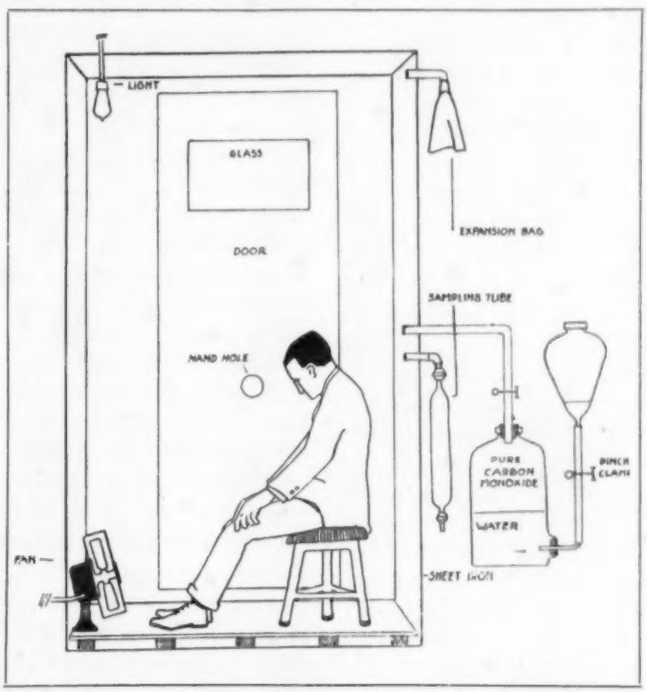
liberated in the form of heat and movements. When from any cause the supply of oxygen to this combustion is impeded, as in drowning, when the water prevents air from entering into the lungs, or in choking or strangulation, when the occlusion is mechanical, the condition may be compared to the closing of a draft on a furnace. The fire is checked and is limited by the deficient supply of oxygen. If this checking is carried to an extreme, the fire goes out. Just so is the physiologic fire, which we call life, extinguished. Carbon monoxide poisoning is quite analogous to drowning or strangulation, but with this difference: in drowning or strangulation the air cannot reach the lungs and can not replenish the hemoglobin of the blood. In carbon monoxide asphyxia the air can reach the lungs, but the gas so alters the blood that its ability to carry oxygen is decreased in proportion to the amount of hemoglobin which has combined with carbon monoxide.

Permanent Damage to System

Carbon monoxide can not be used, burned, or otherwise destroyed in the body. It can escape only by diffusing back through the lungs, when the victim is removed from the contaminated air, into an atmosphere free from this gas. The bodily damage wrought by carbon monoxide occurs as a result of the oxygen deprivation (anoxemia) during the time the hemoglobin is combined with the gas. The duration of the anoxemia depends on the length of the victim's exposure to the gas and the rapidity with which the blood rids itself of the carbon monoxide after the victim's removal to fresh air. The delicate tissues of the body, the blood vessels, the nerves, and the brain may be damaged either directly by the want of oxygen or by secondary changes induced by it. Thus serious and perhaps permanent damage may result, such as paralysis and amnesia.

Very definite laws govern the absorption of carbon monoxide when one breathes an atmosphere contaminated with this gas. Both carbon monoxide and oxygen unite with the hemoglobin of the blood.

The attraction between carbon monoxide and hemoglobin is from two hundred to three hundred times as great as that between oxygen and hemoglobin. Thus, when blood is exposed to an atmosphere containing one three-hundredth as much carbon monoxide as oxygen, the reaction progresses until the hemoglobin is equally distributed between the two gases. Consequently if a man breathed for a sufficient time an atmosphere containing the usual 21 per cent. oxygen, which had been contaminated with about 0.07 per cent. of carbon monoxide, 50 per cent. of the hemoglobin in the blood would eventually be unable to carry oxygen; 50 per cent. of the hemoglobin in combination with carbon monoxide is just below the point at which unconsciousness occurs. But 60 per cent. for a long enough time would probably be fatal.



By means of this small experimental chamber, and the apparatus included, the effect on the blood of measured amounts of carbon monoxide is tested. Carbon monoxide is introduced from the bottle outside into the chamber. Samples of air for analysis are withdrawn from the chamber through the sampling tube. The person inside thrusts his hand out of the hand hole when samples of blood are required for analysis.

Rate of Development of Asphyxiation

In drowning or strangulation the duration of oxygen deprivation is important. This is true in an even greater degree in carbon monoxide poisoning. Although the inhalation of 0.07 per cent. of carbon monoxide would ultimately bring about a serious condition, this state would not be reached until after many hours in the contaminated air. The explanation of this is simple: the effect depends on the volume and rate at which the gas is absorbed, and on the amount of hemoglobin with which it must combine to displace a given percentage of the blood oxygen.

It may be assumed that we breathe an atmosphere containing 0.07 per cent. of carbon monoxide. The average man at rest breathes approximately 8 or 9 liters of air each minute. Under the assumed conditions this volume of air would contain 5.6 to 6.3 cubic centimeters of carbon monoxide. Of this only about one half or even less would be absorbed, thus making a maximum absorption of about 3 cubic centimeters of the gas each minute.

The average adult has in his body sufficient blood for its hemoglobin to hold 1 liter, or 1,000 cubic centimeters, of oxygen. At the rate of absorption assumed, an exposure of one hour would result in the displacement of 180 cubic centimeters of this oxygen and would represent an 18 per cent. combination of the hemoglobin with carbon monoxide. This is in no way dangerous and just verges on the amount which in some persons produces a slight headache. During the second hour of absorption a smaller amount would be taken up, since as the concentration in the blood rises, there is tendency for the gas to diffuse out through the lungs and thus slow the rate of absorption. As a result of this, many hours would be required to attain the maximal formation of carbon monoxide hemoglobin under the conditions given.

The rate at which the asphyxiation develops from the inhalation of carbon monoxide is determined by (1) the concentration of the gas breathed, (2) the volume of blood in the body, and (3) the rate, or volume, of breathing. The first of these factors is, of course, a variable which depends upon the circumstances of exposure. The second is a function of the body weight; the large individual has the greater amount of blood. The third, the rate of breathing, is distinctly a variable quantity and depends on the body size or, rather, surface area of the individual and the state of activity. Other things being equal, the smaller the individual the more readily he succumbs to the gas, since his volume of breathing is greater in relation to his volume of blood than that of the large individual. The extreme of this is met with in the mouse and canary bird, in which the volume of breathing in relation to the mass of blood is about twenty times as great as in the average man. This is, of course, the basis for the use of these small warm-blooded animals in mines in order to detect the presence of carbon monoxide. They show acute symptoms of the gas in about one twentieth the time a man reaches the same stage in the same atmosphere; thus a safe margin is allowed the miner for escape.

Aside from the variation in concentration of inhaled carbon monoxide, the greatest factor influencing the rate of absorption is the extent of physical activity. With exertion, the rate of breathing to the minute increases. Thus while a man at rest may breathe from 6 to 8 liters of air each minute, the same man walking at an average gait breathes about three times as much and would have, under comparable conditions, a proportionate increase in the rate of absorption of carbon monoxide. In violent exertion the volume of air breathed may rise as high as ten times that during rest.

In carbon monoxide poisoning the victim often has no real warning of the seriousness of his condition until it is too late for action. He may be totally unaware that anything is wrong with him until his legs give way and he falls, unable to rise. If the gassing is less rapid, he may develop a throbbing headache which perhaps passes into nausea, vomiting, and prostration. Men in the partially asphyxiated state lose judgment and self control; they become hysterical and violent; often they behave as if under an alcoholic intoxicant. This is observed at times in firemen who are partially overcome by smoke. All of the effects of carbon monoxide poisoning are greatly accentuated by any physical exertion.

Artificial Respiration for Victims of Gas Poisoning

Death from acute carbon monoxide poisoning is almost invariably due to failure of respiration. The heart continues to beat for several minutes after breathing has stopped. When breathing has stopped it rarely if ever is established spontaneously. The human mechanism is like an automobile engine in some respects. It continues to run through the very act of running. When the engine stalls, it must be cranked and the mechanism thus started, as it were, through the very act of going. When breathing stops, it can be reestablished only by maintaining it artificially until the body again takes on this function. For this reason methods of artificial respiration have been developed. There are two of these methods, the manual, or Schäfer prone pressure, method and the employment of various mechanical devices designed for the purpose.

Prone Pressure Method.—In the Schäfer prone pressure method the victim is laid face down with the right arm extended straight ahead, palm down; the left hand is placed on the right shoulder and the head turned to the right and rested on the crossed arm. The operator kneels facing forward and straddling the victim, his knees just back of the victim's hips. He extends his arms stiffly and rests the palms of his hands on the lower ribs of each side of the victim's back, leans forward, and gradually brings his weight to bear upon the ribs. This forces the air from the lungs. He then slowly swings back to the starting position and thus removes the pressure, while air is drawn into the lungs by means of the intrinsic elasticity of the chest wall. The process is repeated at regular intervals at a rate of from sixteen to twenty times a minute.

There has been much discussion as to the proper placement of the operator's hands on the victim's back, and as to whether at the end of the up stroke he should remove his hands or allow them to remain on the back. These are minor points; either way is good. Care should be taken to avoid damage to the

victim by excessive vigor; aside from this the operator may have refinements of detail such as he believes tend to the maximum of efficiency and minimum of fatigue on his part. For the sake of training unskilled men for rescue work, however, it is highly desirable to have a uniform outline of procedure and to avoid personal variations and controversies to the detriment of the victim. To this end, a very practicable outline of the manual method is issued by the National Electric Light Association, which furnished the illustrations for this paper of the manual method of artificial respiration.

Mechanical Devices.—The prone pressure method of artificial respiration here described is superior to any of the mechanical devices for artificial respiration. These machines have been introduced largely through the uncritical enthusiasm of newspaper reporters. The public has been led to believe that the very spark of life is embodied in them. This is a delusion; in fact, these machines probably have killed more persons than they have saved. In order to save the life of a gas victim, artificial respiration must be started within at most four or five minutes after breathing has stopped. The mechanical devices for artificial respiration are rarely at hand, and even when they are, valuable time is lost in adjusting them to the victim and in starting them to working. An even greater objection, however, lies in the fact that if dependence is placed on these machines by the person who finds a gas victim in whom breathing has stopped, he rushes to the telephone to send for the mechanical device instead of grasping the one chance of life and starting the manual method of artificial respiration without delay. The time thus lost is decisive. If the breathing of the gas victim has recently stopped, his life is in the hands of the first arrival who may save it if he knows the simple steps of the manual resuscitation method. The availability of mechanical devices discourages the acquisition of this knowledge and makes the bystander loath to assume responsibility when it can readily be shifted by sending for the machine. Artificial respiration should never be used for a gas victim who is still breathing, yet it is doing this very thing which has won for these machines their undeserved reputation as life savers.

First Aid Measures

In drowning or electric shock artificial respiration by the manual method is the whole story in resuscitation. In gas poisoning this is not so. The interest in artificial respiration has distracted attention from the other steps in the first aid treatment of gas poisoning to the detriment of the gas victim. The gas victim who has stopped breathing for more than a few minutes rarely, if ever, is saved. On the other hand, the gas victim who is still breathing when found can generally be saved if treated properly. Treatment must aim not only to conserve life, but also to prevent the after-effects of the gas. This is not difficult when the real problem is understood.

A general knowledge on the part of the public of the simple rules of manual artificial respiration and first aid measures for resuscitation would result in the saving of many lives needlessly lost each year, not so much from gas, however, as from drowning and electrocution. Physicians generally have neglected these conditions and the whole subject of resuscitation. If they treated their patients with fever with the haphazard ignorance applied in cases of gas poisoning, patients would be better off unattended. The hospital records in gas poisoning cases, with few exceptions, indicate the lack of interest of physicians in the treatment of this condition, which kills more men in our cities than many of the serious contagious diseases. In the emergency resuscitations from gas asphyxia by the trained workmen of gas and electric companies, the physician present, in many instances, is a hindrance rather than an aid. Fortunately the industries concerned have shown a greater interest than the medical profession.

The first aid resuscitation from gas poisoning is simple enough for its steps to be carried through by any intelligent person. As already stated, the hemoglobin of an asphyxiated man is 60 to 80 per cent. combined with carbon monoxide. His vital fires are checked and any physical exertion may cause death or irrevocable damage. At least two hours will pass before enough gas is eliminated to make the blood an efficient carrier of oxygen. During that long a time, at least, the victim is to all intents and purposes still in a gas contaminated atmosphere. The problem is to remove the carbon monoxide from his blood. First he must be removed from the gas. In doing this the rescuer must not be sacrificed. A handkerchief tied over the nose and mouth is not a gas mask. No one is immune to gas. A man exerting himself in gas for a rescue may be overcome in one tenth the time that the same condition was reached in the quiescent victim. There are today safe and tried gas masks against carbon monoxide. Rescue crews should be provided with them.

Bring the Victim into Fresh Air

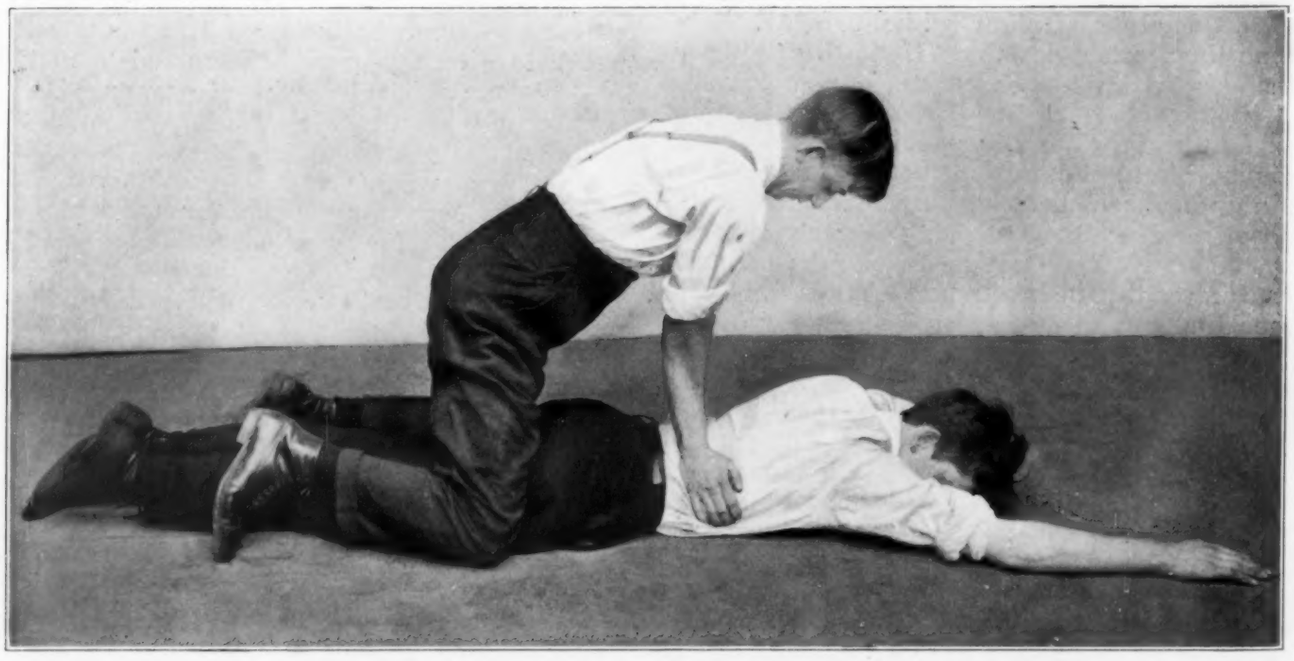
Bringing the victim into the fresh air is only the beginning. Fresh air does not mean outside air in cold weather. Chilling results in a greater strain on the vitality and may

First position in giving artificial respiration by the prone pressure method. The operator's hands rest on the victim's lower ribs.

extinguish life. Men have staggered from warm rooms containing gas to collapse in the cold fresh outside air. The victim should be taken to a warm place and laid down flat on his belly. The right arm should be extended straight ahead, palm down and the left hand placed on the right shoulder. The head should be turned to the left and rested on the crossed arm. The victim should be kept in that position until he is virtually recovered and conscious. If he is not breathing, manual artificial respiration should be started at once and continued until breathing starts, or for at least four hours. If he is breathing, some one should stand ready to start artificial respiration at any instant in case he stops.

Keep Him Warm and Quiet

The victim must be kept warm. Blankets, overcoats, and hot water bottles serve for this. If necessary, hot water bottles may be filled from the radiator of an automobile, but it must be remembered that a hot water bottle burn may be the worst after-effect of the



Second position in giving artificial respiration. The operator swings slowly forward to bring his weight on the victim's ribs.

gassing and the rescuer may be held liable for his well intended zeal.

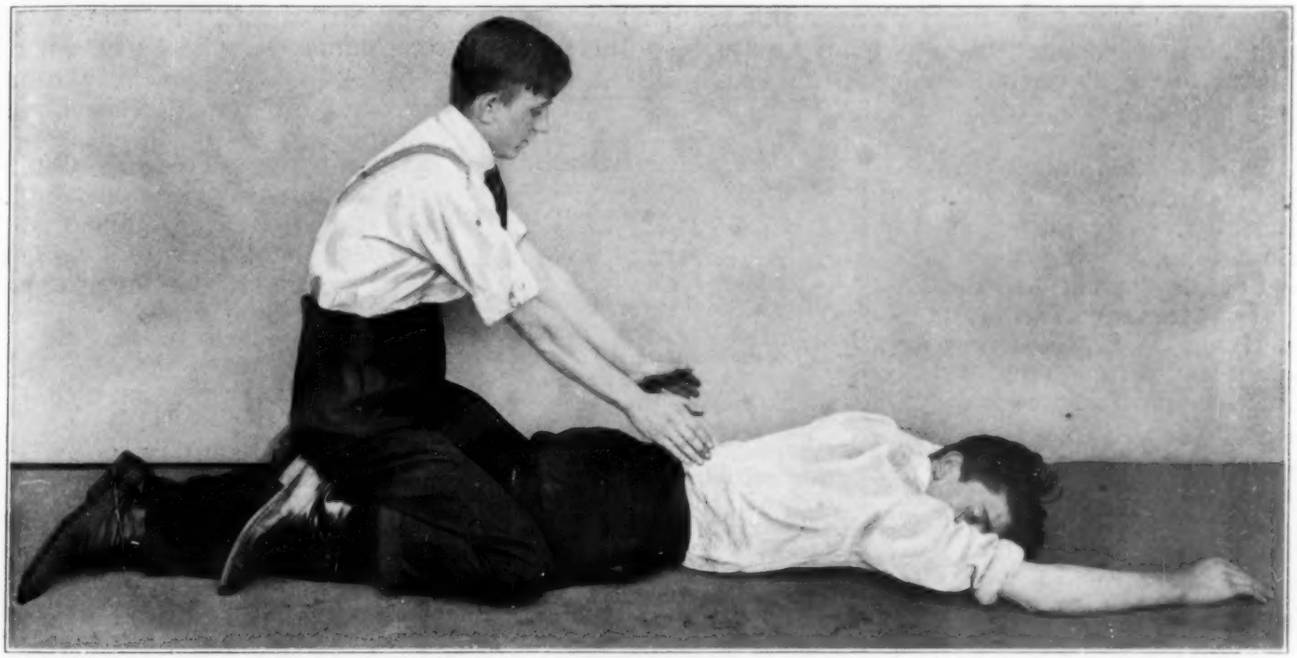
An unconscious man should not be given anything by mouth. When he is conscious he may have black coffee, but never alcohol in any form. Alcohol and carbon monoxide act in much the same way in the body.

When the victim is conscious, he should be kept warm and quiet for at least six hours. Even after that he should be under the care of a competent physician in order to prevent the development of that most frequent and unfortunate of all sequels, pneumonia.

Supply Oxygen for the Lungs

After respiration has been started the next step is the promotion of the rapid elimination of the gas from the blood. As long as gas remains in the blood the victim is suffering from asphyxia. The conditions which govern the elimination of carbon monoxide are the reverse of those which cause its absorption. The elimination may be hastened by increasing the tension of oxygen in the lungs; the reaction between oxygen and carbon monoxide and hemoglobin is thereby accelerated, with the result that the gas is more rapidly forced from the blood and replaced with the desired oxygen. The desirability of giving oxygen to gas victims has been recognized for many years. The difficulty in practice arises from the fact that after long exposure to the carbon monoxide, respiration is very much depressed or very shallow; therefore little of the oxygen is inhaled and little of the carbon monoxide eliminated.

At times oxygen seems even to depress breathing. On this account Professor Yandell Henderson and I decided to utilize the stimulating effects of carbon dioxide. We introduced the use of a mixture of 5 per cent. carbon dioxide and 95 per cent. oxygen. Through the stimulating effect of the carbon dioxide, the depression of breathing due to the oxygen is avoided. Under such inhalation the victim breathes several times the usual volume and under the mass action of the oxygen inhaled, the elimination of the carbon monoxide is greatly hastened and the period of asphyxiation proportionately shortened. The process is exactly the reverse of the rapid absorption of carbon monoxide during physical exertion; the detrimental effects of exertion are avoided and the respiration alone is increased.



Third position in giving artificial respiration. The operator swings back to the resting position. The whole procedure is repeated deliberately from twelve to sixteen times a minute.

This method has given excellent results in the elimination of carbon monoxide after asphyxiation both in laboratory experiments and in accidents in which it has been tried. In field study it was found that the carbon monoxide was almost wholly eliminated from the victim's blood within from twenty to thirty minutes after inhalation of the carbon dioxide and oxygen mixture. Frequently consciousness returned during the period, and within a few hours the patient was practically well. In none of the patients so treated was there a case of pneumonia, nor were there any of the nervous after-effects.

Uncle Sam's Fight on Germs

II. How He Controls the Making and Selling of Biologic Products

E. K. FOLTZ

IT is astounding to note the vogue that serums have attained. The idea of using serums, vaccines, antitoxins, and similar products in the prevention and cure of disease has become so fixed in the popular mind that the first thing the average man thinks of when ailing is whether or not the injection of the serum will be painful. He assumes at once that his physician is going to use a serum. If it happens that his malady is not treatable by a serum or vaccine, the patient is likely to ask himself whether his physician knows his business: "Bill's doctor gave him a vaccine for a cold, yet here I'm laid up with a sprained ankle, much worse off than Bill, and my doctor hasn't given me a vaccine! Something wrong."

For the benefit of those not conversant with the underlying principles of treatment by serums—and that includes most of us—it may be said that, in general, the use of vaccines, serums, antitoxins, and remedies of this kind is applicable only to infectious diseases, that is, diseases caused by living germs. Not all germs are harmful. On the contrary, some of them are exceedingly beneficial, so beneficial indeed as to be fed to patients in the form of medicine. It is the harmful germ that concerns us most. The mere presence of the germ itself is not ordinarily a matter of moment. But a great many organisms have a way of throwing off poisons and other substances harmful to health. It is here that the mischief comes in, and it is here that antitoxins and serums come into play.

When the body is overwhelmed by germs that give off substances poisonous to man, it begins the production of protective substances to counteract the poisons. In many instances it produces them in sufficient quantities to offset the poisons of the disease germs; the patient becomes immune. Too often in severe contagious diseases, however, the body can be overcome by poisons before it has time to marshal sufficient protective substances. Man has now learned how to supply them by causing their production in the bodies of animals. These biologic products include serums and vaccines. To insure their purity for the safety of his family, Uncle Sam oversees their manufacture.

Protective Substances Manufactured in the Human Body

With the development of bacteriology came one of the most remarkable discoveries in medical science. It was learned that whenever an animal or human being is invaded by enemy germs giving off poisons, the body begins the production of a protective substance to neutralize the poison thrown off by the germs. In a great many instances nature manufactures the protective substance within the human body fast enough and in sufficient quantity to overcome the poison thrown off by the germs, by this means counteracting the threatened damage and so establishing what is known as immunity to disease. In a large proportion of diseases, however, the invasion by enemy germs comes so suddenly that damage is done before nature has had time to manufacture its protective substance, in exactly the same manner that a gang of bandits may hold up a passenger train and rob several hundred persons before they can organize for defense. Within the last two years our country has had an epidemic of train hold-ups; but it did not take long to stop the practice by putting armed guards aboard.

Protective Substances Manufactured Artificially

Scarcely had nature's system of self defense been discovered than bacteriologists began making vaccines and antitoxins in laboratories to provide artificial means of immunizing persons against bacterial diseases. And so the use of serums and vaccines has come to be a most potent weapon in the hands of man for the cure and prevention of infectious diseases.

Few persons have any but the most hazy idea of what a serum or vaccine or antitoxin is. Avoiding things technical, we are likely to group all these terms under the single word "serum," and let it go at that. But why not be approximately correct? It is most comfortable to know what we are talking about.

Serums

A serum is made from blood. When a person scratches his hand, the trifling wound begins to exude a sticky, oozy substance that soon dries and forms a scab. This mucilaginous material is the serum. The blood of a

healthy person or animal always contains a certain amount of serum and it is from the blood serum that protective "serums" are made. If a pint of horse blood is permitted to stand in a glass container over night in a cool temperature it will be found in the morning to contain a large clot enveloping the red corpuscles. Above this is a pale, straw-colored fluid. This is the serum; and it is this serum that contains the curative properties.

In making diphtheria antitoxin, for example, diphtheria toxin is injected into a horse in such small amounts that it will be harmless to the animal. As soon as the animal receives this, his body begins to manufacture an antitoxin sufficient to overcome the toxin; this antitoxin is first local in the blood serum, and thence is distributed throughout the horse's body. As soon as nature has had time to produce the antitoxin, another and larger amount of toxin is injected, with a corresponding increase of production of antitoxin in the horse. The proceeding is repeated until the animal has become a good producer of antitoxin. When this state has been reached, blood is drawn from the horse under the most hygienic conditions, care being taken not to draw an amount that will injure the animal; the serum is then separated from the other constituents of the blood, put through a highly technical process, tested for purity, standardized, and put up in containers for the physician's use. When a horse is found to be a good antitoxin producer it at once becomes an aristocrat and is almost worth its weight in gold. It is coddled and cared for with minute attention to its health and comfort; a veterinarian is always at hand, it enjoys the best pastures, and may look forward to a life of luxury in the service of mankind.

Vaccines

In the manufacture of vaccines, living germs are used instead of the blood of an animal that has been made immune to the particular disease. Sometimes the germs are grown in artificial mediums, such as broth, the white of egg, or gelatin. They are collected at the proper time, killed by great heat or steam, and put up in convenient form for the doctor's use. At other times, germs are injected into animals, where they multiply. Thus, in vaccination against smallpox, calves are inoculated with special strains of cowpox; when the proper stage of eruption is reached, the material from the pustules is collected, purified, tested, and put up in tiny sterilized glass tubes. Vaccine against hydrophobia is made by inoculating a rabbit with rabies; about the eighth day after inoculation it is killed by chloroform and the spinal cord removed. The cord is then put through a special process, and we have a most remarkable preventive for hydrophobia. Incidentally it should be remarked that no person who has developed hydrophobia has ever been known to get well. It must not be assumed, however, that vaccination after a bite by a mad dog is a sure preventive of hydrophobia, but the percentage of cases that develops after vaccination is so low as to be almost negligible. Among about one thousand eight hundred patients treated at one health institution, less than a dozen deaths from hydrophobia occurred after treatment.

As may readily be surmised, the manufacture of a remedy that is introduced into the human body is a most delicate undertaking and involves an intricate process fraught with many dangers to health and life unless the manufacturer observes untold precautions. Suppose, for example, that a manufacturer of vaccine used for the prevention of smallpox should put out a product contaminated with dirt or organisms of disease: The result might be the loss of many arms, and perhaps lives. Or, suppose a large distributor of typhoid vaccine should become careless in his manufacturing methods and pay little attention to the strength of his product, so diluting it that it would be too weak to be beneficial: Thousands of persons might then be vaccinated against typhoid fever and believe themselves protected, and only discover the mistake when it was too late. Happily such conditions have been made impossible by the hard and fast supervision which the Hygienic Laboratory keeps on the sale of such products from one state into another.

Manufacture Controlled by Federal Government

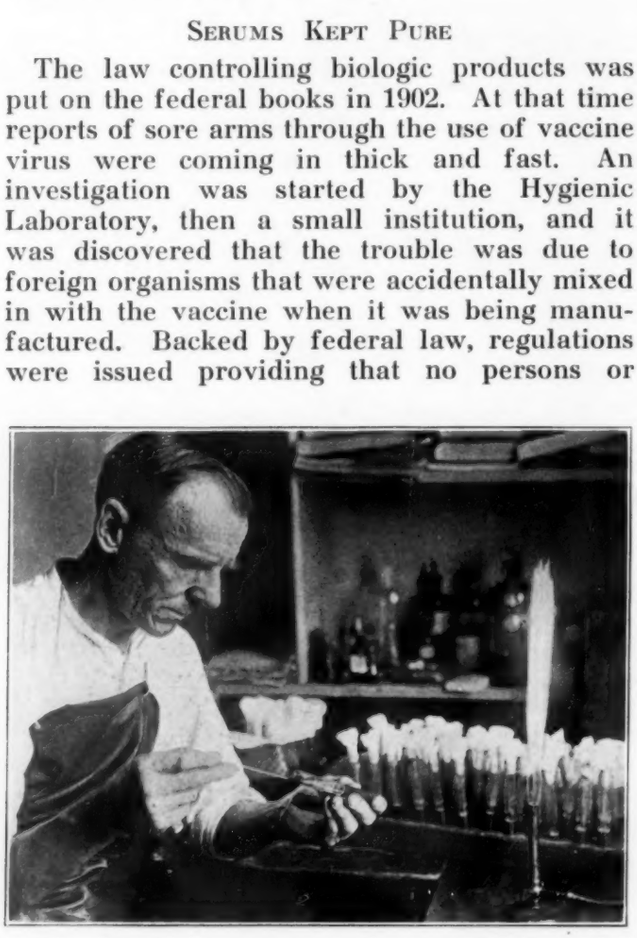
The Public Health Service a score of years ago, foreseeing the extensive use of serums, asked Congress to pass a law placing the control of such products in their hands. It did not take Congress long to grasp the importance of such legislation and it immediately put on the federal statute books a law governing the manufacture and sale of biologic products, serums, antitoxins, vaccines, viruses, and the like. So successful has this law proved that today thirty-five American and eight foreign establishments are licensed to engage in the interstate sale of serums and similar remedies. More than a hundred different kinds of biologic products are in use, every one of which can be administered only by a qualified physician.

It is safe to say that ninety-nine of every hundred persons of our vast population at some time in their lives find it necessary to have a biologic remedy administered to them, either to prevent or to cure disease. The public attitude toward serums and vaccines

is one of the utmost confidence. And this confidence has been amply justified. In view of the fact that a hundred million people are vitally concerned in the use of a single class of remedies, it may not be amiss to say a few words about the law protecting them—what it is and how it works.

Serums Kept Pure

The law controlling biologic products was put on the federal books in 1902. At that time reports of sore arms through the use of vaccine virus were coming in thick and fast. An investigation was started by the Hygienic Laboratory, then a small institution, and it was discovered that the trouble was due to foreign organisms that were accidentally mixed in with the vaccine when it was being manufactured. Backed by federal law, regulations were issued providing that no persons or



The bacillus of tetanus is grown in these test tubes, so that a pure strain may be available for the standardizing of antitoxin.

company be licensed to engage in the interstate sale of vaccines, serums, or antitoxins unless their establishment is operated in accordance with the rules set down by the government. Immediately, several firms went out of business—an eloquent confession. To the credit of the others be it said that they wasted no time in getting down to cleaning house. The result was that within a remarkably short time, unclean vaccine was a thing of the past. People gained confidence, the vaccine business picked up so fast that the companies could scarcely meet the demands, and soon manufacturers of biologics came to Washington to offer their cooperation.

A representative of one of the wealthiest drug manufacturers in the United States walked into the Hygienic Laboratory one day and shook hands with the director, who thought he foresaw an unpleasant interview.

"Doctor," said the man, "I'd like to see you about this vaccine and serum law."

"Fine!" exclaimed the director. "But before we get started, let me tell you that we're tightening up a bit on you people."

"That's exactly what I wanted to see you about. Say, you can't tighten up too tight for us. The use of biologics is the biggest thing that has ever come to this little old world in the way of disease prevention and cure, and I just dropped in to say that we're with you. The public has to be given clean, pure goods, or all that you doctors have done in the way of discoveries will go for naught. I wish you'd send your inspector to look over my plant. I believe we've done everything that's humanly possible to make a pure, safe product."

The United States law requires that before a manufacturer may make serums in one state and sell them in another, he must hold a license issued by the secretary of the treasury. Violation of this provision carries a severe penalty. In order that the physician purchasing a package of serum for use on one of his patients may be assured that he is getting a good product, the manufacturer is required to print his name, lot number, license number, and date of expiration on the outside label of the package. The date is an important feature of the identification, since serums and vaccines lose their strength with age. By this system of dating the physician is given a check on the potency of every kind of vaccine or serum or antitoxin required in his practice.

Federal Inspection Yearly at Least

Every concern engaged in the manufacture of serums, toxins, vaccines, and such products is inspected by a federal officer of the Public Health Service at least once a year. This officer visits the laboratories where the products are made and examines minutely every detail of the business, regardless of the company's reputation. He takes nothing for granted. Every process, every method, every person connected with the work receives his critical attention. Should he find gross carelessness—a thing which, by the way, has been excessively rare—the government would close the establishment at once. Minor infractions he brings to the attention of the bacteriologist in charge of manufacture, and they are adjusted without formality.

Expense in Production of Vaccines

Every establishment making biologics is required to employ expert bacteriologists, who are responsible for the purity of the output and for the proper methods of manufacture. Such bacteriologists must be men or women of unusual ability and training, and their qualifi-

cations must meet with government approval. The personnel under their direction is subject to rigid regulations, so that there may be no chance of error through unskilled or unhealthy employees. Likewise, all the animals, such as horses, sheep, calves, goats, and rabbits, from which serums are obtained, must be healthy and kept under the most stringent sanitary conditions. One can readily understand that the production of serums and vaccines under such exacting conditions means expense. This is a point to bear in mind.

Cooperation Between Manufacturer and Government

The federal inspection of establishments making serums is but a small part of the work of control. Samples of every kind of biologic product offered for sale are secured and sent to the Hygienic Laboratory at Washington for bacteriologic examination. Usually these samples are obtained by the inspector at the commercial plants; sometimes they are purchased at drug stores in various parts of the country, or obtained through practicing physicians, the object being to get samples in the exact condition under which they are given sick persons. When a sample is found defective, the manufacturer's troubles begin. He receives instructions from Washington ordering him to withdraw from the market every lot of that product.

So careful are the manufacturers that even in so small a detail as changing the wording of a label they consult the Hygienic Laboratory in advance. Last year 3,590 samples were tested in the laboratory and not a suspension ordered, from which it may rightly be gathered that the cooperation between manufacturers of biologic products and the government is complete and satisfactory.

The Laboratory often receives inquiries from physicians and druggists in all parts of the country as to the merits of this or that make of serum or vaccine.

"Who is the most reliable manufacturer of typhoid vaccine?" writes a large drug house in Chicago. A physician in Georgia wants to know whether the pneumonia serum made by the *A B C* Company is as good as that made by *XYZ* & Company. "Which firm makes the best hydrophobia vaccine?" a druggist in Virginia asks.

The Hygienic Laboratory answers, "All of them."

No favorites are played. Every physician and every user of biologic products in this country may rest assured that the holder of a government license is thoroughly qualified to offer a clean line of remedies. This does not mean that the Public Health Service guarantees cures or even guarantees the quality of the products. It does mean, however, that the licensee has complied with the government requirements.

Standardization of Biologic Products

One of the important functions of the Hygienic Laboratory is the preparation of standards for biologic products. Standardization is growing on everybody. We have standard building materials, standard measurements, standard methods of publishing, standardized sports. We prefer to purchase articles that are standardized because they run true to form; we like them and feel safe in dealing with the business man who handles standard goods.

"Have you seen the new folding, double acting gas burner *XYZ* & Company is putting out?" asks the young salesman. "Guaranteed to cook two meals in one without heat."

"Yes, I know," replies the housewife, "but I think I'll stick to the Burnit brand. It's standard, you know."

In the search for an improved method of killing the spirochete of syphilis, hundreds of experiments were carried out by Uncle Sam's workers.

When the physician has a case of diphtheria, he's going to give antitoxin that he knows is standardized. He cannot buy any other kind. Likewise with tetanus antitoxin. These two products have been officially standardized for strength. In addition, a number of other biologics have been relatively standardized, so that manufacturers may have a uniform basis, at once sound and efficient, by which to measure the strength of their products.

Chief among those that must meet government standards is arsphenamine, often called salvarsan, and allied arsenicals used in the treatment of syphilis. There are a number of such remedies, all having arsenic in some form as a fundamental constituent. When a dangerous poison like arsenic is injected into the human system, it behooves the physician to know what he is using. The Public Health Service has therefore adopted a rule that every lot made up by manufacturers must be

tested and approved in the federal Hygienic Laboratory before it can be sold.

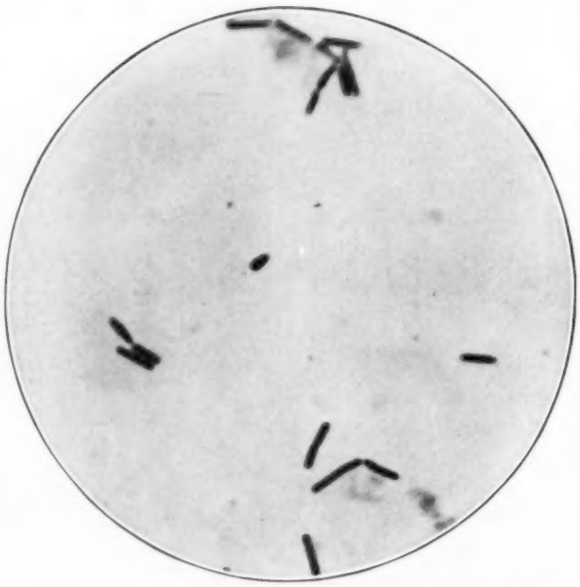
Improvements on 606

Some years ago the world was startled by the announcement that a cure for syphilis had been discovered. Fortunately, the news broadcast at the time by the press was well founded, and mankind at length found a marvelous remedy for a disease that had, at one period, swept away 25,000,000 lives in Europe and threatened civilization itself. The remedy was popularly referred to as 606, later as salvarsan, and more recently as arsphenamine. As with other medicines involving the use of powerful poisons, a great deal of trouble was encountered in the use of arsphenamine and related arsenicals. In many cases it was found impossible to kill all the germs of syphilis in a victim of the disease, due to inability to reach the remote parts of the body with the poison.

The Hygienic Laboratory, recognizing this situation, began an extensive series of experiments to find a new method of injection or to devise a modification of the drug which would make it safer and more efficient.

As a result of the vast amount of chemical and physiologic research, a modification of arsphenamine has been worked out, so that the remedy may now be administered even to a small child with safety. Whereas the older remedies had to be injected directly into the blood stream, difficult when dealing with a baby, the new remedy is simply injected under the skin with no more trouble than when the physician gives the patient a hypodermic injection of morphine.

The methods of modern scientific research were well illustrated in these experiments. Foreseeing great difficulties, one of America's leading pharmacologists, now holding a professorship with the Public Health Service, took the work personally in hand. He laid out his work with most minute precision, equipping his laboratories with special apparatus for a long tedious undertaking, with an eye to the various features of the studies—chemical, bacteriologic, and physiologic. As it was not feasible to perform the experiments on human subjects, they were carried out on white rats, since these little animals are easy to handle and highly responsive to the subtle influences necessary in the studies. Moreover, rats are peculiarly susceptible to infection by a blood parasite masquerading under the euphonious name *Trypanosoma equiperdum,* which is the cause of the so-called horse syphilis. This organism may be seen under the microscope as a highly active bit of life in a droplet of rat's blood. darting about here and there in quest of its living to the detriment of the animal's health. Now, this trypanosome and the germ of syphilis have so many habits in common that, instead of choosing the organism of syphilis, *Spirocheta pallida,* which is very difficult to handle, the trypanosome was chosen as an ideal germ on which to carry out experimental work with arsenical poisons.



These hazy rods are forms of the Bacillus botulinus that is found in vegetables. This bacillus is the most dangerous food poisoning organism known; a temperature of 240 F. for forty minutes is required to kill it.

After the selection of the germ and the animal which it readily infects, the next step was to prepare a multitude of poisons in order to learn which would act the best, the object being to find one which would penetrate to the most remote parts of the body and kill the trypanosomes. Of course it is easy to kill every trypanosome in a rat by killing the rat itself; and it is quite as easy to kill all the germs of syphilis in a man by killing the patient. But when it comes to making up a poisonous solution that will "get" every germ and be harmless to a sick, weak, person—that's another story. The chemists who had to work out formulas for the experiments were put to it. But they had been given the problem and it was up to them to produce. And they did. With arsphenamine as a working basis, they proceeded to devise modifications and variations by an intricate system of chemical manipulations. As soon as a formula was reached, they turned the resultant product over to a bacteriologist for testing its power to kill trypanosomes in infected rats. After many formulas had been evolved and an untold number of tests made, a preparation was at last produced which, when used on syphilitic patients, gave excellent results.

Investigation of Food Problems

Everybody has heard of cases of poisoning from eating canned fruits and vegetables that

have spoiled. Now, the eating of spoiled food isn't so bad as it sounds. For instance, the delightful snappiness of cheese is caused by the introduction of a certain germ to cause decomposition. When the spoilage has progressed to the right point, the process is arrested, and we have cheese of varying flavors, to please our appetites. It sometimes happens that a germ bearing the proud name of *Bacillus botulinus* takes up its home in canned goods and in growing excretes a powerful poison. Usually food contaminated by botulinus can be detected by a bad smell, yet in the hurry of meal-getting and the variety of odors incident to cooking, a can of fruit or vegetables held too long on the shelves occasionally gets by, and as a result the family is poisoned. To meet such emergencies an antitoxin has now been perfected, and the government has succeeded, after much research, in establishing a standard by which commercial manufacturers of botulinus antitoxin may measure the quality of their output.

[*To be continued.*]

Tuberculosis—II. Symptoms, Treatment, and Chances of Cure

ALFRED HENRY

STRANGE as it may seem, tuberculosis is a disease that is more understandable than almost any disease of mankind; yet the masses probably know less about it than about any of the common infections. The chief of the reasons for this peculiar condition of affairs, it seems to me, is probably the fact that most people have not yet been acquainted with the simple facts of the cause and cure of the disease. The whole subject has been treated, more or less, by a great part of the medical profession as some sort of deep hidden mystery, the details concerning which it would not be well for every one to know. The National Tuberculosis Association and its subsidiary associations have long taken the stand that no mystery exists, and that it is only fair that the public should know all about the disease that the medical profession knows.

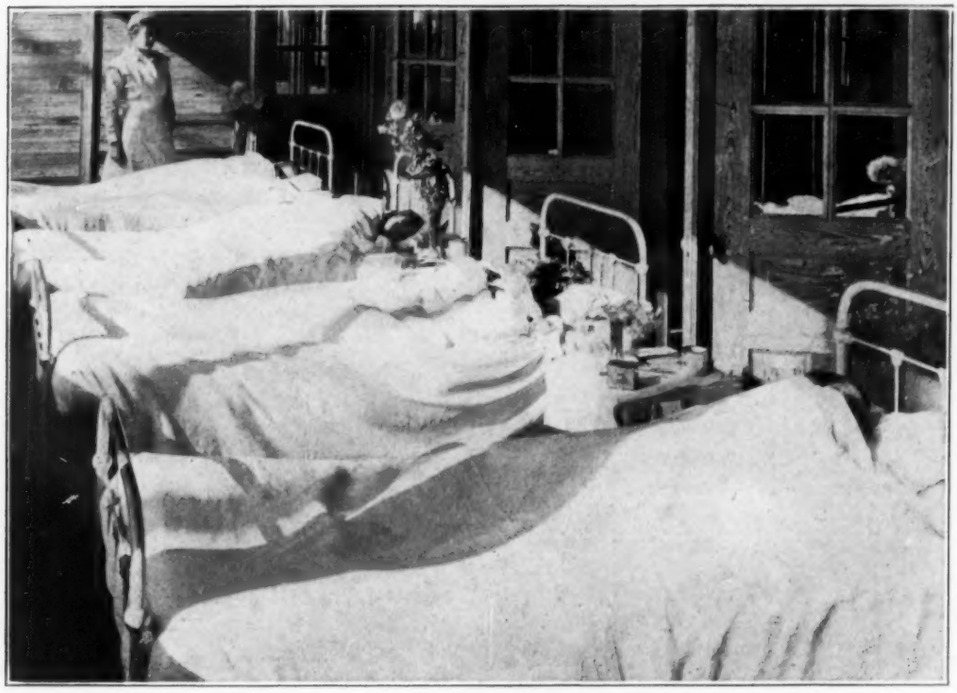
"Can I get well?" asks the patient who has been told that he has tuberculosis. The answer does not depend on the physician so much as on the patient, since in his attitude lies the greatest hope of his cure. If he has confidence in his medical adviser and determination to follow all rules and get well, he is far on the road to recovery. The financial hardships of the rest cure may seem appalling to some patients, but they must be forgotten, for in tuberculosis peace of mind is barely second to care of the body.

The time has passed when only the term consumption is known. People are coming to know the term tuberculosis as fully as they know the terms typhoid, measles, and mumps. Sad to relate, it is schooling which has been regrettably expensive. Professor Fisher of Yale has placed a valuation of eight thousand dollars on a human life. One hundred and forty thousand lives were snuffed out last year by tuberculosis in the United States. Based on this one item alone, the loss for one year was one billion, one hundred and twenty millions. Add to this the total cost of hospitals, medical attention, and the things necessary to take care of the sick, and one is dragged into figures beyond human comprehension. Tuberculosis is an infectious and contagious disease. In other words, it is caused by a germ and is communicable from one person to another. People understand that measles, whooping cough, and other acute infections of childhood are "catching." Tuberculosis should be understood to be the same.

The Symptoms of Tuberculosis

The person who is ill may not be able to make the correct diagnosis of his ailment, but he knows that he is not physically efficient; he knows that he is sick. It is the business of the physician to inform patients what their ills are and he should also teach them the significance of various symptoms relative to different diseases. To know tuberculosis one must first know its symptoms. Languor, afternoon temperature, cough, possibly expectoration, loss of appetite, and loss of weight are the earliest and principal symptoms.

Languor.—By languor is meant a tired feeling that cannot be accounted for, and that dates to some more or less definite time. It is characterized by such expressions as "no



The only certain way of resting completely is by staying in bed. These beds can be rolled into the rooms back of the porch where part of the time is spent until the patient is accustomed to twenty-four hours a day outdoors, summer and winter, unless the weather is very severe.

pep," "loss of ambition," and "run down." It often follows some acute illness such as influenza, pleurisy, pneumonia, and deep seated cold. Languor is the most significant symptom known in the early stage of the disease.

Rise in Temperature.—Except in rare instances, a rise in temperature in the afternoon is always present in tuberculosis. In the early morning, the temperature is usually below normal. As the patient becomes more active during the day, the temperature constantly rises until it reaches the maximum some time later in the day. This maximum temperature depends on the degree of activity of the disease; it is high or low depending on whether the disease is incipient or advanced. The presence of fever cannot always be determined by the way one feels. One may feel hot without having an increase in temperature. One may feel cold and have an increase in temperature. The only way to determine is by the use of a thermometer several times during the day for several days.

Cough.—Cough has always been regarded as a primary and constant symptom in tuberculosis. It does not always develop, however, until later in the course of the disease. It begins as a hack and a clearing of the throat, without expectoration, thereby giving rise to the term "dry cough." As time goes on and the disease progresses, sputum is coughed up, nature's way of clearing débris from the area of trouble. This sputum is a combination of mucus and pus, the latter a product of pus producing germs that are sent by nature to help the patient rather than to hinder him in getting well. Of course, cough may increase without an increase of material coughed up. This may be accounted for by pressure on certain nerves, variations due to inflammations, and reflex conditions.

Loss of Appetite.—A loss of appetite is characteristic of many conditions, of course, but in tuberculosis it appears with the other warning symptoms mentioned. Like languor, it usually cannot be accounted for and dates to a more or less definite time.

Loss of Weight.—A loss of weight naturally follows a loss of appetite, especially if the latter has persisted for some time. Often there is some digestive disturbance. Many persons with tuberculosis complain of "stomach trouble" first. As in all infectious diseases, a toxic, or poisonous, substance is thrown into the blood stream and carried to all parts of the body. This impairs all of the tissue cells and lessens their ability to function normally. The whole body then is sick. If the tissue cells cannot take on oxygen and food properly or, as we say, carry on the process of assimilation, this is further evidence in establishing the diagnosis of disease.

The rest cure can be taken at home if the physician's instructions are carried out conscientiously and the home is open to fresh air and sunshine.

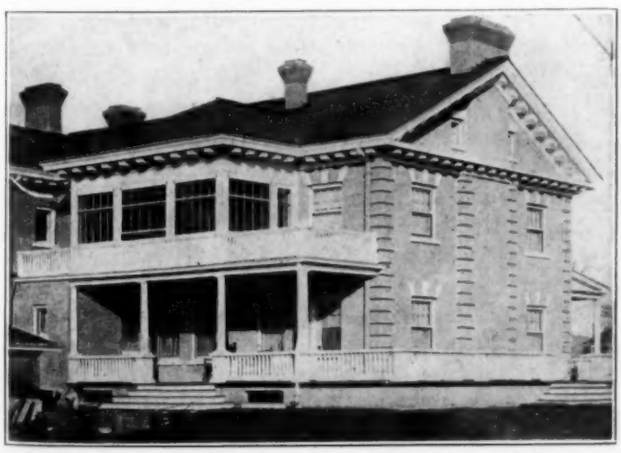
Tuberculosis Not Inheritable

The former teaching that tuberculosis is inheritable has been discarded, and it should be, because it is dangerous teaching. The followers of a certain religious sect believe that "what is to be, will be." If this theory were followed out in tuberculosis, there could be no substantial basis for advocating prevention. Since this disease is contagious and infectious, it is natural to try to find the source of infection in some direct exposure instead of in some ancestor. For instance, if a child's parent with whom it was associated had tuberculosis it means much more than if the child's grandfather or uncle, with whom it was not associated, were infected. One can acquire the infections of diphtheria, measles, or scarlet fever with an exposure of ten minutes, while it might require an exposure of several months to acquire tuberculosis.

Rest, good food, good cheer, fresh air, and proper medical care and nursing combine to heal tuberculous lungs. Some patients are never so ill with tuberculosis as to require constant rest in bed. Others reach the happy stage in improvement when they can sit up part of the day.

Curability of Tuberculosis

The curability of tuberculosis is doubted by the laity perhaps more than that of any other disease. It is even called "the great white plague" in contradistinction to the "black plague" which brought to death nearly all of its victims. Many persons do not have any personal knowledge of any one's being cured of tuberculosis and if they had they might wonder if the diagnosis had been correct. But the truth is gradually and surely dawning. Tuberculosis is just as curable as many of the other common diseases. The trouble has been faulty thinking. So many sick persons have been cured by drugs that it is natural to look always to drugs for a cure. It is difficult to break away from time honored beliefs and accept an entirely new way of thinking. Drugs still cure many illnesses when properly used, but there are some in which there is not the desired response to such remedies. Tuberculosis is one. Quinine will cure malaria; mercury will cure syphilis, antitoxin will cure diphtheria; and Flexner's serum will cure cerebrospinal meningitis. These are called specific cures. There is no such specific cure for tuberculosis, and the sooner the race discovers this and resorts to proper and up-to-date thinking, the sooner it will lift from its shoulders the heavy load, mistakenly borne, that is known as the tuberculosis problem.



Porches like those shown in this and the opposite picture may be added to homes in order to furnish the patient outdoor living and sleeping quarters.

Treatment—Requisites to Cure

The cure lies in five things: rest, fresh air, nutritious food, a satisfied mind, and proper medical attention. Because of lack of space, discussion of fresh air and nutritious food will be omitted here, not because they are not of importance, but because their importance is probably best understood by the public.

Rest

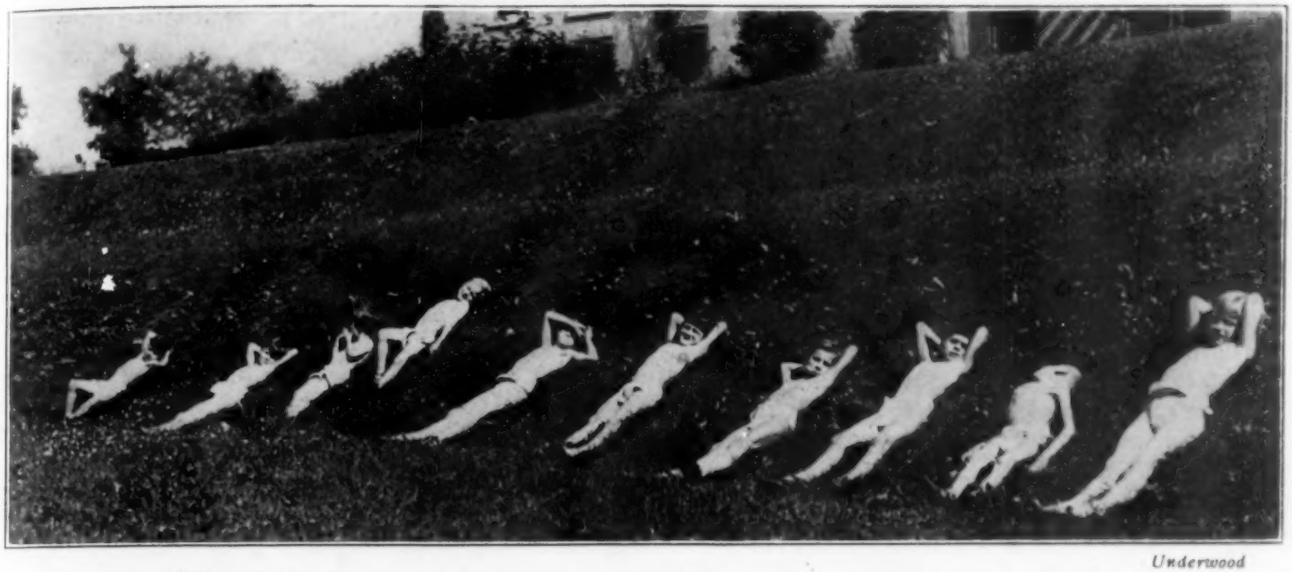
Perhaps the most important factor in the cure of tuberculosis is rest. Formerly it was believed that a person with tuberculosis must keep up his work in order to keep up his strength. Mountain and hill climbing, horse back riding, and long walks were prescribed. It was believed that if the patient went to bed, as he naturally would in any other sickness, he would become weaker and finally die from lack of sufficient exercise. It is now known that all of this is wrong. It has been proved beyond any doubt that just the opposite is true. The public has been so slow in accepting the rest theory that the solution of the tuberculosis problem has seemed a hopeless task. It is known now and accepted that in rest lies the hope of the tuberculous.

Exercise creates body heat. Body heat consumes the elements taken into the body for the promotion of its growth and the preservation of its health. The tendency of the disease to consume gave it its name, consumption. In exercise energy and resistance are expended, while in rest they are preserved. The human body in all of its tissues is made up of tiny cells as a brick house is made up of bricks. The health of the whole body depends on the normal functioning of these cells, which is to utilize food and oxygen in the production of energy. When this disease attacks the body, this function is impaired. Rest will restore this lost energy more quickly than anything known. A broken bone is put up in splints; a sprained wrist is put in a sling; an inflamed stomach and intestine are given less food to digest; an inflamed eye is kept in the dark; a nervous breakdown is treated by quiet. Such illustrations and many more that might be given show that rest is a highly important factor in the treatment of diseases. No lengthy argument is needed to convince the most doubting.

Many children with tuberculosis of the spine are placed on a frame. The little bodies are strapped to the curved board, and in serious cases even the head is strapped, so that motion is impossible. This assures complete rest and gives the vertebrae a chance to rid themselves of the bacillus of tuberculosis.

Tuberculosis is characterized by minute spots known as tubercles, which may be described as small swellings, brought about by inflammation. If they can be prevented from rupturing, the spread of the disease may be checked. Rest is the agency looked to for this prevention. Even deep breathing might cause these small areas to break. Certainly vigorous exercise is not indicated. This is why patients are advised to discontinue all work until a cure is effected. It is easy to put out a fire when it first starts, but it is difficult to control the flames of an entire building. If it were possible to stop all expansion of the lungs, such as deep breathing brings about in a lung, tuberculosis could be cured in a very short time, but since this is impossible the next and most logical thing to do is to put the patient to rest in bed and free him from all physical responsibility. A few weeks' trial will easily convince anyone that such rest will control fever and cough. The production of sputum will be lessened and the patient will feel materially better. It is true of course that a bed patient feels weak when he attempts to walk, but it must be remembered that the lungs are being treated and not the legs. There will be no difficulty in learning to walk after the disease of the lungs is under control and on the way to recovery. The refusal to accept rest treatment has caused the loss of many lives. The greatest thing to be said for care in a sanatorium is that the patients are willing—or are required—to accept rest treatment.

One great misfortune in carrying out the rest treatment is the loss of salary to a person who may be wholly dependent on his wages for a living, or who may happen to be a wage earner who is striving to support a family. The father of several young children may have to give up, or the mother of small children must relinquish her household duties and her accustomed family care. Any such situation is indeed unfortunate, but the cure program remains the same regardless of inconvenience and hardship. The same struggle must be gone through in order to get well. Tuberculosis is no respecter of persons. If anything is to blame it is the nature of the disease itself, and this cannot be changed. The inevitable must be accepted and the optimist will decide it is worth while to do whatever is required of him to get well. It is a terrible thing to be attacked by this disease, but it is more terrible to give up and not make the effort to get well and be restored to health and the ability to care for dependent ones. Cessation from work necessitates a great financial loss to many persons, but there is plenty of time to compensate for this loss after they are well. All



Underwood

In some children's institutions the sun treatment is given a large percentage of patients. The children whose cases are slight are allowed to be out of bed much of the time. They have regular school classes, rest periods, and play periods, and during all periods they wear only a breach clout. The sun's rays directly on the body are known to be most beneficial.

argument against taking the rest cure is based on false premises.

Mental Attitude

Another great asset in the cure of tuberculosis is the mental attitude of the patient. The high mortality rate in this disease has caused many persons to give up hope at the onset. "I know that I will never get well!" is the lament frequently heard by a physician whose duty it is to tell a patient that he has tuberculosis. The patient may even regard the advice of the physician as criminal and unnecessary. But when the nature of the disease and its cure are explained to him new hope immediately arises, and an inspiration to make the necessary fight. Today the medical profession assumes that the public wishes to know the truth. When one consults a physician one naturally wants to know what the trouble is. Many persons even say to the physician, "Now, I want a thorough examination and I want to know the truth." It is only fair that they should. If pneumonia is diagnosed as pneumonia, tuberculosis should be diagnosed as tuberculosis. Lying about a diagnosis has cost many lives unnecessarily. If one is to go through the process required to get well from tuberculosis, a diagnosis of "bronchial trouble," "weak lungs," or a "deep seated cold" can never lead to a proper culmination. For instance, why should the president of a bank, or the mother of six children, or anyone else holding a responsible position be persuaded to quit work and go through the long grind necessary to cure tuberculosis, when he has been told that bronchitis is the cause of his sickness? The fact is that he seldom can be persuaded because he knows that bronchitis is not cured in that way. A patient can only be made to see the necessity for taking the cure for tuberculosis when he has been told the truth. Of course there is more or less shock at first, but the patient who knows his condition is generally an ideal patient.

Unsatisfactory Patients

Patients often speak of unsatisfactory doctors, but probably none of them realizes that there is such a thing as an unsatisfactory patient. Refractory soldiers often serve time in the guard house. Such punishment is for the purpose of preserving the morale of a regiment. Similar discipline is good for the army of the tuberculous, but it is not often rigidly enforced, although it might well be sometimes because the mental attitude of the patient is often wrong. A patient must make up his mind that there will be nothing lacking on his part in the fullest cooperation with his medical supervisers. This attitude is absolutely necessary in bringing about the desired result.

Cheerful Companions and Surroundings

The whole program of the cure for tuberculosis cannot be carried out by the physician and the patient alone. If the latter is to be happy and satisfied all the time, his surroundings must help to keep him so. Relatives and neighbors and well meaning friends often do more harm than good in attempting to give advice. One is easily disturbed by being told that one must change climate or suffer the consequences. Some relatives see no sense in resting so much. One ignorant father told his son that if he would not get out of bed and take long walks and exercise more he would surely die. Neighbors often pre-

scribe certain patent medicines that they believe cured some sick person they used to know. Word reaches the bedside of a patient that a doctor in a town nearby cures tuberculosis with electricity. A friend may drop in to pay his respects and discuss the topics of the day. Incidentally he mentions the fact that an acquaintance of his has died recently with a hemorrhage. He also remembers that a former teacher is on his death bed with tuberculosis. No wonder the cheerful patient becomes dissatisfied and pessimistic. His chances for recovery are lessened. If a patient is to be kept optimistic, all such influences must be ruled out. Another reason for lack of hope and improvement is homesickness. Nothing need be said about this because it is preventable. The mental attitude of the patient, in all of its phases, is one of the principal aids in curing tuberculosis.

Proper Medical Attention

By proper medical attention is meant the dictates of the attending physician. It must be understood that the patient has nothing to say on this phase of cure. The physician is the sole judge. It may be that some drug is administered which is supposed to have a direct bearing on the disease germs, or some drug may be given for the condition of the stomach. The latter may have an indirect bearing on the disease proper. A serum may be administered to increase the resistance of the organ affected, or a vaccine may be administered to counteract an infection besides tuberculosis. Tonics may be given to restore lost appetite or to increase the ability of the tissue cells throughout the body to do their work normally. In case of advanced disease it may be advisable to put air or nitrogen around the lung to force more rest on this organ than rest in bed can make possible. This process is known as gas treatment, lung collapse treatment, or induced artificial pneumothorax. It seems that one must readily appreciate the fact that a physician's judgment only should be considered in any or all of these procedures. A patient has no right to a judgment in such matters. They should be left wholly to the discretion of the physician in charge, in whom there should be the most implicit confidence.

Prognosis—Hope for the Patient

Prognosis means outcome. The first question a patient asks of a physician is, "Can you cure me?" A truthful and conscientious reply might embarrass the physician and discourage the patient, for it would have to be "No." The better question for the patient to ask would be, "Can I get well?" and the answer could be "Yes." Since the cure is not a specific one, but is a process carried on by the patient in cooperation with the physician, the question of getting well lies in the efforts of the patient to follow the advice given in the program of treatment. Then one could better ask himself "Am I going to be a ready and willing patient?" instead of "Can you cure me?" The difference is just the difference between optimism and education on one side and pessimism and ignorance on the other.

Picture several hundred patients in a sanatorium who are not made to rest a sufficient number of hours daily, do not have nourishing food, are without proper ventilation, and are unhappy from various causes. And suppose these patients are reluctant to accept the treatment prescribed and are unwilling to accept proper discipline in all of its phases. The whole combination naturally produces a morale wholly insufficient to bring about favorable results. What can be the prognosis in the case of each patient? On the other hand, imagine a similar institution filled with the same number of patients, living under wholly different and favorable conditions, obeying rules, taking sufficient rest, plenty of palatable and nutritious food and fresh air, everybody satisfied and happy, every order carried out to the letter, and a morale of 100 per cent. What would be the prognosis in the case of each patient? But instead of picturing an institution and several hundred patients, let each one direct the thought to himself and imagine what would happen. There should be no question about death or life. A patient may choose his own outcome.

A RECOVERY RECORD FOR THE TUBERCULOUS

It is important that during the recovery of a tuberculous patient a daily record be kept of the temperature, pulse, weight, and other items. An excellent little book for this purpose has been prepared recently by Drs. Gerald B. Webb and Charles T. Ryder. It is also full of sound, cheerful advice. The book may be procured through a physician, and should be used under his direction.

While the Children Are Getting Well

ABRAHAM LEVINSON

CONVALESCENCE is the period of recuperation. It is the period between the disappearance of the active symptoms of the patient's disease and the time of his return to normal health. The length of the period of convalescence varies according to the nature of the malady, the amount of damage it has produced, and the degree of resistance of the patient after the acute symptoms have subsided.

Are Quick Cures Possible?

We hear of rapid recoveries. One who is not informed on the subject may believe that a patient actually recovers from a severe disease like pneumonia or an operation for appendicitis in a few days. This false conception of what constitutes complete recovery is due to the mistaken idea that when a patient leaves the hospital with a normal temperature he is well. As a matter of fact, some patients just begin their convalescence when they leave the hospital; recovery is sometimes delayed for weeks or months, or, indeed, may never be complete. This is as true of children as it is of adults.

"I don't know what we'll do with Mary when she's well enough to be up, she's so cross and spoiled now that I'm about worn out," says the fond parent who has nursed Mary through measles or mumps, or some disease more serious. Just then, perhaps, Mary yells, "Mother, hurry up," and Mother hastens to obey. The parent who so fails in the sympathetic management of a sick child or one on the way to recovery is responsible for traits and habits that make the child a tyrant in its family and among its friends. Some hints on what to do for convalescing children, when "Mother, I don't know what to do with myself" is the usual petulant wail, are here given by Dr. Levinson.

In order to understand the finer points of convalescence, one must know the changes from the normal of both disease and convalescence. We cannot, as was the custom among the older physicians, separate diseases into stages, assigning to each stage a certain change in the various organs of the body. We cannot even, properly speaking, limit the changes of a given disease to one organ.

Effect of Disease on Every Organ

While it is true that a single organ may bear the brunt of change in certain diseases, every other organ necessarily partakes of some changes. For example, although the intestines bear the brunt of the disease in typhoid fever, every other organ in the body feels the effects; in meningitis the covering of the brain is most vitally affected, yet every other part of the body suffers concurrently. In some diseases the heart muscle suffers most, as in diphtheria; in others, the kidneys, as in severe cases of scarlet fever. In any disease in which there is much fever, with rapid pulse and breathing, the internal organs of the body are sooner or later affected. In short, no severe disease fails to leave its imprint on every organ of the body. If actual inflammation or degeneration of the organ does not occur, there is at least a lowered resistance on the part of the more vital organs of the body, resulting in loss of their power, to some degree, to perform the normal amount of work consistent with health. This is especially true in children, in whom, because they are growing, the vital processes are more active.

With this broader conception of disease, convalescence assumes great importance from the standpoint of prophylaxis and treatment. Once it is appreciated that every disease may attack every organ in the body, we cannot make light of the period of restoration or reparation. It is necessary for every organ of the body to regenerate during convalescence, if the damage done is to be repaired and the vitality lost is to be regained. Of course, in many cases some of the damage done can never be undone. An injured heart or a badly damaged lung can never be mended. If the damage to an organ has not been very extensive, however, it is possible for regeneration to take place, provided too much strain is not put on that organ. Every convalescing patient should be under the charge of a physician who has a proper understanding of convalescence, its abnormalities, its physiology, and its inherent dangers. The management of convalescence must necessarily vary with the disease and with the patient, but some general directions may be outlined.

Physical and Mental Rest

If it is necessary to protect a child's energy during illness, it is doubly necessary to do so during convalescence, for during the actual illness the child is too sick to exert itself, but during convalescence, when it feels strength returning, it is very liable to over-

exert itself. This overexertion frequently brings on a dilatation of the heart. Experience has shown that the best way to prevent inflammation of the heart during disease or convalescence is not to overtax the heart. Rest in bed is obviously the best way of taking the burden off the patient's heart. Of course, it is hard to keep a well child in bed. No sooner does its temperature drop than it wants to be out of bed and at its usual activities. But the danger of overexertion on the part of the heart makes it imperative that this organ, which must be in constant action, be taxed as little as possible for a considerable period. All persons with uncomplicated cases of infectious disease should be kept in bed at least five days after the temperature has subsided to normal, and should have two to three hours rest every afternoon for two weeks thereafter.

It isn't only the food that is given, but the way it is served. Having a party with dolly at the table will help tempt even a slender appetite for wholesome and plain food.

Just as it is necessary for the child to have a physical rest, it is important to let it have mental rest. One of the most difficult problems in connection with the convalescence of a child is how to keep it quiet in order to avoid complications. A child gets restless unless it is kept busy. A grown-up person may indulge in reading. A child either does not know how to read or tires of it quickly. Some form of entertainment should therefore be selected for the child with consideration for its physical and mental condition.

Entertainment

Entertaining a convalescing child is important, but it must be done systematically and must be suited to the patient's general condition; otherwise the patient will easily be fatigued. Permitting a convalescent child to be visited by many friends is often bad for it. A child likes to show off and may use its reserve strength in order to impress visitors with its recovery. Every convalescent child should be entertained, but the entertainment must not be exciting and should preferably be prescribed by the attending physician.

A child with St. Vitus' dance, for example, should not be given any toys that will require the use of its hands, because this interferes with the rest which is so necessary for such a patient. No matter how good the physical condition of a patient may seem to be, entertainment that requires excitement may be disastrous. The mental age of the child should also be taken into consideration. A child of five should not be given toys that are intended for a child of ten.

The mental age of the child should be used as a guide in providing entertainment for convalescing children. The following types suggest themselves as a general guide:

Type 1, mental age three to four—cutting, coloring, arranging simple blocks.

Type 2, mental age four to six—arranging blocks, pasting paper chains and paper baskets.

Type 3, mental age six to eight—learning letters, reading, sewing, raffia work, counting.

Type 4, mental age eight to ten—Tinker toys, building with blocks, pasting stamps, sewing.

Necessary Exercise

It may sound paradoxical, but it is true that a convalescing child needs rest on one hand and exercise on the other. The exercise, however, must be light and graduated. After some diseases the exercise needs to be passively administered by means of massage or electricity, as in cases of infantile paralysis, after the muscle pain has entirely subsided. In most diseases, however, the exercise should

be active, that is, it must be carried out by the patient himself. The exercise should preferably be directed by an expert. If not, the mother may be guided by the rule, "Slow but sure." The mother must be impressed with the danger of permitting the child to resume strenuous exercise too suddenly; at first, playing with toys while in bed is the only exercise permissible. Later, walking in the house, and still later, exercise outdoors.

Sunshine and Fresh Air

"I suppose I cannot take the baby out for another two or three weeks," is the usual wail of the mother during the child's convalescence. This same mother may have taken her baby out for an airing before it was ill during the severest storms, but after the child has had pneumonia, she insists on keeping it in, in spite of the lack of sunshine in the house and the abundance outside. A convalescent child needs sunshine and air, even to a greater degree than a healthy child. The convalescent child should be taken out on the porch in a wheel chair whenever the weather permits, and so gradually accustomed to cold air. The time to be allowed for that must naturally be guided by the patient's condition.

Scissors, a pot of paste, old magazines, and a scrap book can make the child of eight or ten forget how long the days in bed can seem.

Food

Physicians go to both extremes in feeding convalescent children. Some overfeed, others underfeed them. The first group insists that the convalescent child needs strength, which it must get through an abundance of food; the other group insists that the convalescent child cannot digest even ordinary food properly.

Warm coated, well packed into the big steamer rug, and enjoying the sun and fresh air on the porch.

Experience has convinced me that a convalescing child needs proportionately more food than does a healthy child. Of course, the food should be as simple and as wholesome as possible. On the other hand, if the child shows a distaste for food, there is something wrong with its digestive apparatus or it has not fully recovered from the disease. This type of child should be neither overfed nor starved, but should receive enough food to sustain it. Convalescing children are very particular about the taste and appearance of food. Pains should therefore be taken to make it as palatable as possible.

Discipline

As important as it is to rest and to entertain a convalescing child, it is also important not to pamper it. The average child takes advantage of its mother's sympathy and soon becomes a dictator to its mother and the rest of the family. It is important to be firm, and to make the child understand that it is not master of the situation. A certain amount of discipline is of prime importance, both to the future of the healthy as well as of the sick child.

Money in Mud

The Claims and Composition of Some Complexion Clays

ARTHUR J. CRAMP

NEXT to nostrums sold for the alleged rejuvenation of the male, the most popular form of contemporary charlatanry lies in the exploitation of alleged beautifiers for the female. During the last year or two the cosmetic market has been glutted with a veritable avalanche of so-called complexion clays and face packs. The fad has almost burnt itself out and the druggists who stocked up with those brands that were sold through the retail channels have been left, as usual, holding the bag.

Terra-derma-lax

One of the most blatantly advertised of the complexion clays is "Terra-derma-lax." This preparation, a small jar of which sells for $2.50, is alleged to be the "remarkable discovery of a young English scientist," one M. J. McGowan, whose picture adorns most of the advertising. According to the advertisements, McGowan, while only thirty-one years old, has had "ten years' experience as a dermatologist." Investigation has failed to show that Mr. McGowan ever had even ten minutes experience as a dermatologist or that he had ever made a single contribution to scientific literature. Inquiries have elicited the information that this "scientist" worked in a subordinate capacity in the soap and fertilizer departments in the Chicago stockyards.

Since the slump in complexion clays the "young English scientist" has made two new discoveries. One is a "Reducing Cream which Melts away excess fat at any part of the body —slenderizing the figure to perfect proportions without drugs, exercises, diet, rubber suits or painful denial of any kind." This marvel, "Reducine," women are asked to believe, was the result of "five years of tireless research." The other discovery is one that "grows hair with amazing rapidity—glorious, lustrous, beautiful hair." It is called "Nitrox." McGowan declares that he has "been experimenting with hair culture for years" and has "tried and tested every known hair stimulant and tonic recognized by Science." The advertising campaign for Nitrox might convince any reasonably minded person that the preparation would make a wild-haired bolshevik out of a billiard ball.

But to return to McGowan's dermatologic triumph, Terra-derma-lax. In its first stages the business was a mail-order one. The public was told that "Terra-derma-lax cannot be stocked by druggists" as the "active ingredi-

Why "beauty specialists" get rich. A few cents' worth of clay in a fancy jar, bottle or tube; colored labels and more highly colored claims and the public will pay from one to five dollars for a package.

ent that loosens the pores of the skin structure must be fresh." The clay wouldn't keep! Later it was decided, apparently, that the product would stay fresh long enough for the retail druggist to assume some of the financial responsibility for handling it. Then feminine seekers after beauty were told: "Stop at your dealer's today and ask for Terra-derma-lax."

Boncilla

The "Original, Genuine, Clasmic Facial Pack" is "Boncilla Beautifier"—$1.00 for a two ounce tube. With it, "you don't have to wait weeks and months to see results"; you spread the stuff on your face, allow it to dry, and when you remove it find a "youthful complexion, beauty that is natural, lasting, real." Nor is this all:

> "If there is an 'over fat' condition of the face, Boncilla Beautifier, by its peculiar action in opening the oil ducts, reduces this condition."

Thus, Boncilla holds out hope for the fat.

> "On the other hand, if the face is thin and pale, the wonderful flow of blood brought to the face builds up the hungry facial tissues, giving them a renewed plumpness and firmness."

So that there is also hope for the lean, and the searcher for beauty is caught coming and going. Have you lines in your face, Boncilla will make them vanish; in fact, "you can feel Boncilla lifting out the lines."

Boncilla has been recommended also to men for its "rejuvenating benefits." The advertisers had the right appeal. In this connection a news item that appeared in a drug journal not many weeks ago is of interest. It was to the effect that a prize-fighting motion picture star had filed suit for $75,000 libel against the Boncilla concern. The actor, it seems, charged that the "beauty clay" people had advertised that he had used the Boncilla Beautifier; as a result of this claim he was "kidded so about it by his friends that he suffered much humiliation." Can you blame a prize-fighter for feeling that way about it? If such things are permitted to go unchallenged, some enterprising exploiter of cosmetics will be publishing a testimonial from Dempsey on the use of lip sticks.

Domino Complexion Clay

> "I could hardly believe my eyes. Just thirty minutes before my face had been blemished and unsightly; my skin had been coarse, sallow and lifeless. Now it was actually transformed. I was amazed when I saw how beautiful my complexion had become—how soft its texture, how exquisite its coloring."

Thus, the opening blurb from a full-page advertisement of "Domino Complexion Clay." The advertisement is one of those heart-to-heart, personal, and confidential affairs so much affected by the exploiters of cosmetics. The story is supposed to be that of a woman

Chicago Sunday Tribune

Found!

A Skin Laxative that makes any Complexion Beautiful in an Hour

Young English scientist finds natural element which moves skin pores. A single application clears all three layers of the skin, and restores full color. And it is done in 60 minutes!

No, this is not Harold Lloyd in "Safety Last" nor Ed Wynn in "The Perfect Fool." It is Mr. M. J. McGowan posing as a scientist for the purpose of selling "Terra-derma-lax." The advertisement claims that Mr. McGowan has had "ten years' experience as a dermatologist"; investigation has failed to show that the gentleman ever had ten minutes' experience as a dermatologist.

whose skin was coarse, rough, pimply, and altogether not the kind "you love to touch." But one day she learned that "the outer layer of the skin, called the epidermis, is constantly dying." She learned this from a "remarkable announcement" which told "how scientists had discovered a marvelous clay" that would produce new complexions while you wait. Thus persuaded to use Domino Complexion Clay, she smeared it on her face at nine o'clock one evening. At nine-thirty she removed it; "and to my utter astonishment found that I had a brand new complexion."

The Domino people, aside from doing a mail-order business, will use agents. Women who are desirous of making pin money are urged to act as "confidential advisers" for the sale of Domino Complexion Clay. The retail price of the clay is $3.50 a jar. The Domino concern will furnish agents with seven jars for $10.00 which permits a profit to the agent of more than $2.00 a jar. How much profit the Domino concern makes is not disclosed. The necessary qualification for becoming a peddler—pardon! "confidential adviser"—for Domino Complexion Clay is that you shall "talk in a quiet, genteel way about Domino Complexion Clay to a few of your friends."

Boncilla
BEAUTIFIER
The Clasmic Pack
Is the Original, Genuine Clasmic Facial Pack
Here's a remarkable clasmic clay which offers you a complexion beauty that is really deeper than skin deep—and in an amazingly short time.
You don't have to wait weeks and months to see results—they are delightfully apparent after the very first treatment.
Boncilla Beautifier demands no long, tedious facial massage. You simply spread it on your face, allow it to dry, and then remove it with a wet towel. The first application results in a glowing, youthful complexion beauty that is natural, lasting, real.
What Is This Clasmic Clay?
How to Use Boncilla
What Will Boncilla Do for You?
Only Boncilla Will Accomplish These Results

The "Boncilla" brand of clay, if one believes the advertisement, produces a beauty that is more than skin deep.

Mineralava

"Mineralava," price $2.00 a bottle, is "Nature's Beauty Clay"; and its use is "Nature's Way to Beauty." The manufacturer admits it. Needless to say, it had a wonderful origin. It was the result, we are told, of "twenty-three years of scientific research and experiment" on the part of one Mrs. M. G. Scott. For some unknown reason Mrs. Scott is not a scientist, but a "fashionable specialist."

You see, it is all done by opening the pores. The advertising features the old yarn about the boy who, in medieval times, was gilded from head to foot and who died in two hours because "all of his pores were clogged." The woman seeking beauty is told that "it is only when the pores can breathe that the face blooms and lives." The stuff would appear to be a veritable dermatologic corkscrew:

> All the dust of cities, all the grease and impurities that modern life jams deep down into the skin—hitherto quite unremovable—are now drawn forth gently and naturally and completely by Mineralava, in one application.

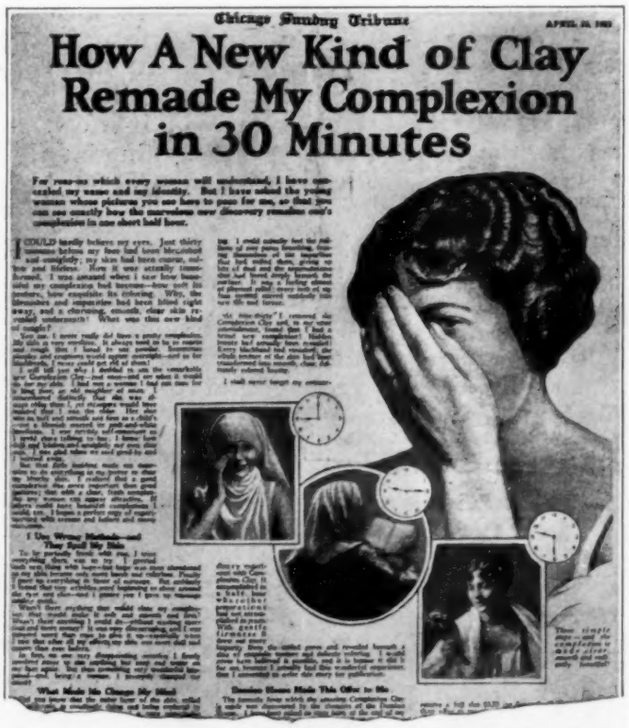
And "all in twelve minutes."

Forty Minute Beauty Clay

According to the label on the jar, the "Forty Minute Beauty Clay" is an English product; according to the newspaper advertisements, it is a Welsh product. You pay your money and take your choice.

Of course, Forty Minute Beauty Clay was a "discovery." The discoverer is alleged to have been one Martha Ryerson, who had "the worst skin a girl could have." The story runs that Martha took her complexion to Wales, and while there "exchanged it for one of soft texture and full of color." Miss Ryerson was struck by the "uniformly beautiful complexions" of the Welsh girls and women. While in the Welsh hills, she was surprised to see a young woman—"a stolid maiden of the Hills"—with her face covered with mud. The native, seeing her surprise, said—according to the advertisements—"Madame does not clay?" Evidently the "stolid" Welsh girl was a French maid in disguise! The girl wiped the clay off her face and "stood in all the glory of a *perfect* complexion."

Inquiring further, Martha learned that "the natives made a weekly habit of claying the skin." Thereupon, she did a little "claying" herself. She describes vividly how the "impurities" were "literally pulled out." In half an hour she removed the clay and found herself so beautiful that when she met her father she "thought his questions would never end." For "Father is a chemist." Father came back home to Chicago where, according to Martha, he experimented again on her and all her "girl friends" and finally produced a compound "as miraculous in its effects" as the clay "used by the peasants abroad." So was born Forty Minute Beauty Clay, price $5.00



Here we have an advertisement of "Domino Complexion Clay" which is said to make brand new complexions in thirty minutes.

a jar. Use it and the "changes brought about in less than an hour will cause open mouthed astonishment"; the advertisement says so.

Such is the advertising yarn regarding the "discovery" of Ryerson's Forty Minute Beauty Clay. What are the facts? Forty Minute Beauty Clay and McGowan's Terra-derma-lax are one and the same thing—an employee of the concern admits it. For a while the two preparations were advertised from different addresses; today they come from the same address. The slump in the "beauty clay" business evidently called for a cut in the "overhead." So the stories of McGowan's alleged scientific research leading to the discovery of Terra-derma-lax and Martha Ryerson's "stolid Welsh maiden," who talked like a French maid, would seem to be pure advertising hokum. Barnum was a piker!

What the Chemists Found

Women seeking short cuts to beauty, having read the complexion clay advertisements, have asked: What are these products for which such marvelous results are claimed? To answer the question the aid of the Chemical Laboratory of the American Medical Association was enlisted. The five widely advertised nostrums just discussed were purchased and turned over to the chemists. Here is the laboratory report:

"The products examined were: (1) 'Terra-derma-lax,' (2) 'Boncilla,' (3) 'Domino Complexion Clay,' (4) 'Mineralava,' and (5) 'Ryerson's Forty Minute Beauty Clay.'

Does Your Mirror Reflect Mineralava?
The Glow of Youthful Beauty
blossoms on your cheek after one treatment of Scott's MINERALAVA—Nature's Beauty Clay that cleanses the clogged pores.
Away with soap which smarts and chafes your skin. Away with face creams which clog up your pores. Away with massage which causes sagging muscles, and destroys the youthful contour of your face.
Use Scott's MINERALAVA. Nature's way to clean the skin. The treatment: MINERALAVA—COLD WATER—SCOTT'S FACE FINISH.
One treatment, and your mirror will tell you the magic of Nature's way. You see your skin clean and white, cleansed to the bottom of the pores, leaving them free of all impurities. Touch the velvety softness of your face—a delight for you to feel, and others to see.
Go to your dealer. Get a MINERALAVA set. If it does not please you the instant you look into your mirror, send it to us, and we will refund your money and postage.
PARIS VIVAUDOU NEW YORK
Scott's Mineralava
Nature's Beautifier
Mrs. M. Scott

"Mineralava" is said to "draw forth gently and naturally" dust, grease, and the other impurities that "modern life jams deep down into the skin." A dermatologic corkscrew, as it were. And all in twelve minutes! The speed demon of complexion clays.

FORTY MINUTES
A New Skin in 40 Minutes
with this Astounding Beauty Clay!
How a Pleasure Trip to Sunny Wales Uncovered a Secret of Mother Earth's That Forever Ends Any Woman's Need for a Complexion Beautifier
FREE DISTRIBUTION OF $5.00 JARS

"Ryerson's Forty Minute Beauty Clay" seems to be another name for McGowan's "Terra-derma-lax." They come from the same source. The illustration in the advertisement reproduced has also been used in some of the "Terra-derma-lax" advertising.

"Boncilla Beautifier comes in a collapsible tube like tooth-paste. Terra-derma-lax, Domino Complexion Clay and Ryerson's Forty Minute Beauty Clay are marketed in ointment jars. Mineralava Beauty Clay is sold in a wide-mouthed bottle accompanied by a brush with which to spread the contents on the face.

"No information concerning the composition of the several products was given on their labels except such as is contained in their names. The presence of clay in all except one (Boncilla Beautifier) is admitted by the manufacturer. Each of the products was a bluish mass of about the consistency of soft putty. Each resembled a mixture of clay and water. Some of the specimens were softer than others and contained more water.

"While the preparations were being studied, there were various rumors current among chemists concerning their composition. With one exception, no substance other than clay, water, and perfume was found.

"Water was determined by drying a portion of the material at 100 C. The proportions of moisture in the several specimens varied considerably, as shown in the tabulated findings.

	Per Cent. Water
"Terra-derma-lax	62.7
"Boncilla Beautifier	48.0
"Domino Complexion Clay	38.5
"Mineralava Beauty Clay	50.8
"Ryerson's Forty Minute Beauty Clay	61.4

"One specimen, Domino Complexion Clay, contained about 5 per cent. of glycerin and about 0.2 per cent. of a salicylate, probably sodium salicylate. Most of the specimens contained considerable quantities of calcium carbonate (chalk) and small quantities each of phosphate and sulphate. These are constituents of some crude clays and their presence indicates

that the clays used are evidently not high-grade products nor are they carefully purified before being used.

"From the analysis it is concluded that Terraderma-lax, Boncilla Beautifier, Domino Complexion Clay, Mineralava Beauty Clay and Ryerson's Forty Minute Beauty Clay are essentially mixtures of clay and water."

Great is the power of words and wonderful the potentialities of modern advertising. Who would have believed that so prosaic a product as clay could be endowed with such esoteric qualities? A study of the "patent medicine" business convinces one that with the right kind of advertising "copy" and a large advertising appropriation one could become rich by selling pink dish-water as a curative agent.

Here is a helpful hint for those women who think the path to beauty lies through the clay route: Go to your neighborhood druggist and purchase a pound of kaolin (dried, powdered clay). It will cost about twenty cents. Mix it with the same weight of water. You will then have two pounds of beauty clay equal in beautifying power to, and purer than, any of the products on the market that are sold for from $2.00 to $10.00 a pound. The only thing you will lack is the mental uplift produced by reading the ineffable bosh published by the complexion clay exploiters.

Centuries ago a wise man wrote: "The getting of treasures by a lying tongue is a vanity." Today "the getting of treasures by a lying tongue" is an advertising art.

So the School Doctor Is a Pest!

HUGH GRANT ROWELL

"WELL, Father, they've sent another notice about Charles from the school doctor. This time they say he's losing weight and very much undernourished. Last fall it was his tonsils. I can't understand why they won't let us bring up our family as we choose. I don't intend to spend all my money for an operation just on their say so. I guess I know if my child is sick and needs to go to a doctor. This gets to be more of a nuisance all the time."

"I agree with you, Mother, I'm sick and tired of it, and I'm going down to see that school doctor and put a stop to this once and for all."

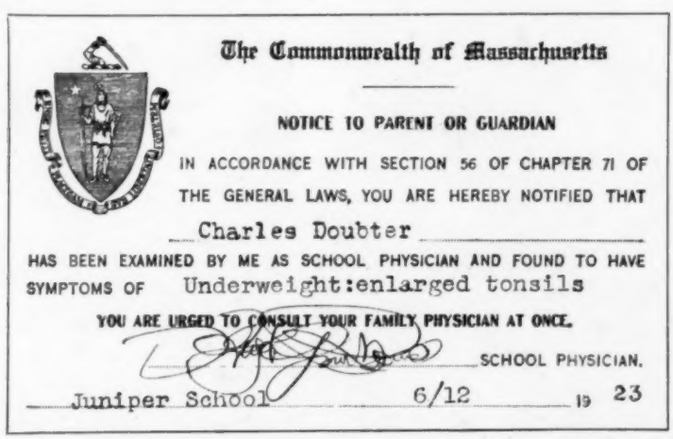
On the husband's return two hours later, his wife, noticing an unusual expression on his face, asked him what the trouble was.

"Mother, I guess I was too hasty in my judgment. I went into the doctor's office and there I found a number of other parents, but instead of being angry with him, they apparently wanted to know more about what he thought ought to be done for their children. Do you know that rich Mr. Walton was there. I started to complain to him about the nuisance. He listened a while, then yawned and asked, 'Ever been down here before?' When I told him no, he said, 'Well, you'd better live and learn!' That's all he'd give for information.

"My turn came soon and I found the doctor looked like a pretty good fellow and didn't appear to know it all, so I thought I'd try to be reasonable with him. I asked him what all these notices were about, hinting that we knew when to send for a doctor.

"'So you do,' said he, 'when one of you is very sick. But has anyone ever told you what is behind this type of work? If not, I'll be glad to take the time to go into it with you, if you are not too busy.' So I told him I had plenty of time to listen if he had time to talk, and, believe me, we sure have been abusing our best friend, and we've pretty nearly got Charles into trouble as well.

"'You know this school work,' he said, 'was started way back in France in 1833 to provide decent working conditions for school children. Then they wanted to watch the health of the children as well. In this country Boston had some severe epidemics among school children, and in 1894 they hired some special school doctors to stamp it out by watching the pupils



The Commonwealth of Massachusetts

NOTICE TO PARENT OR GUARDIAN

IN ACCORDANCE WITH SECTION 56 OF CHAPTER 71 OF THE GENERAL LAWS, YOU ARE HEREBY NOTIFIED THAT

Charles Doubter

HAS BEEN EXAMINED BY ME AS SCHOOL PHYSICIAN AND FOUND TO HAVE SYMPTOMS OF Underweight:enlarged tonsils

YOU ARE URGED TO CONSULT YOUR FAMILY PHYSICIAN AT ONCE.

SCHOOL PHYSICIAN.

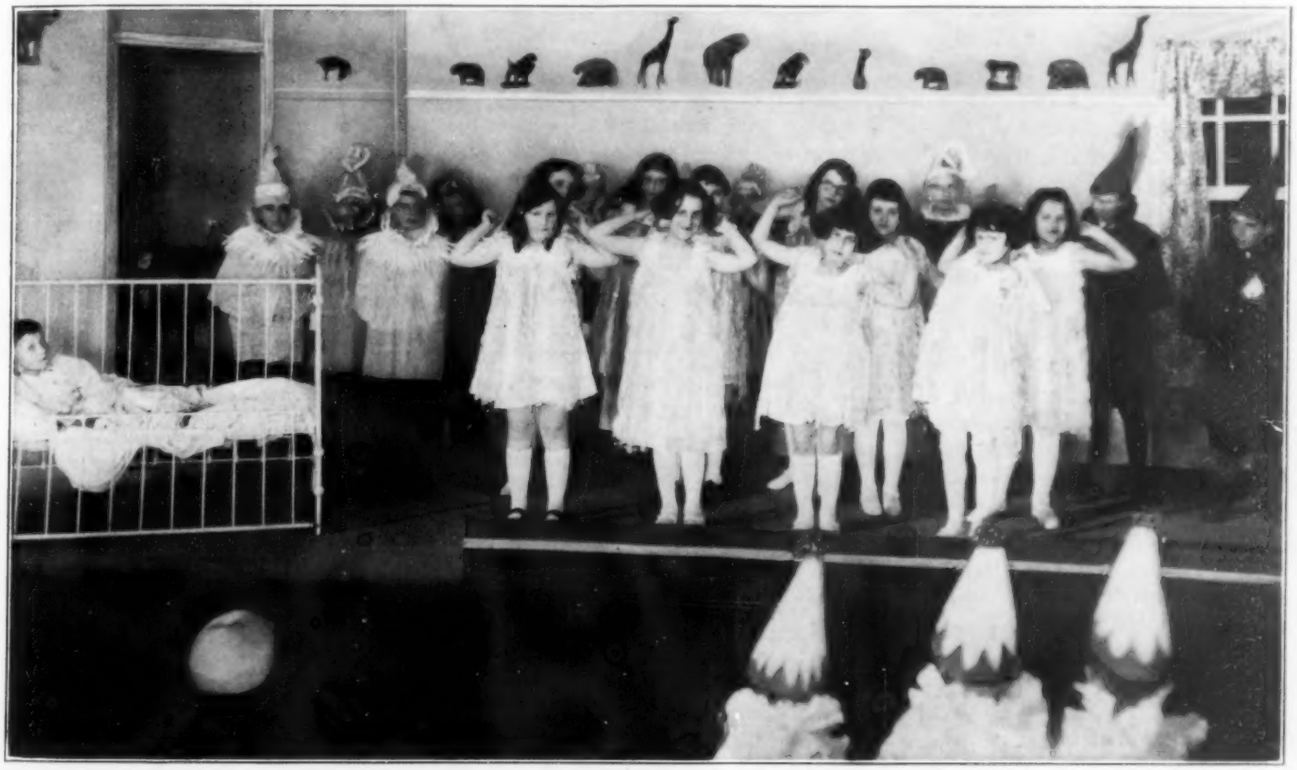
Juniper School 6/12 19 23

"They've sent another notice about Charles from the school doctor."

for signs of disease. The plan made good, and other cities like Chicago and New York had adopted it by 1897.

"'Soon they tried to keep out some of the skin diseases, such as itch and lice and ringworm—and you know we'd hate to find Charles catching them. From that it was only a step to trying to discover less conspicuous diseases, such as chronic tonsillitis, before it was too late for remedy without permanent bodily damage having come first. Now beside all these things, they are teaching children how to live healthy lives. Sounds like a pretty useful program doesn't it?'

"I sure was interested in the outline he gave, and I asked him if he'd tell me some more



Rest hours are spent in health bazaars like this. David, in the bed, is being shown the soap and water girls by the health elves.

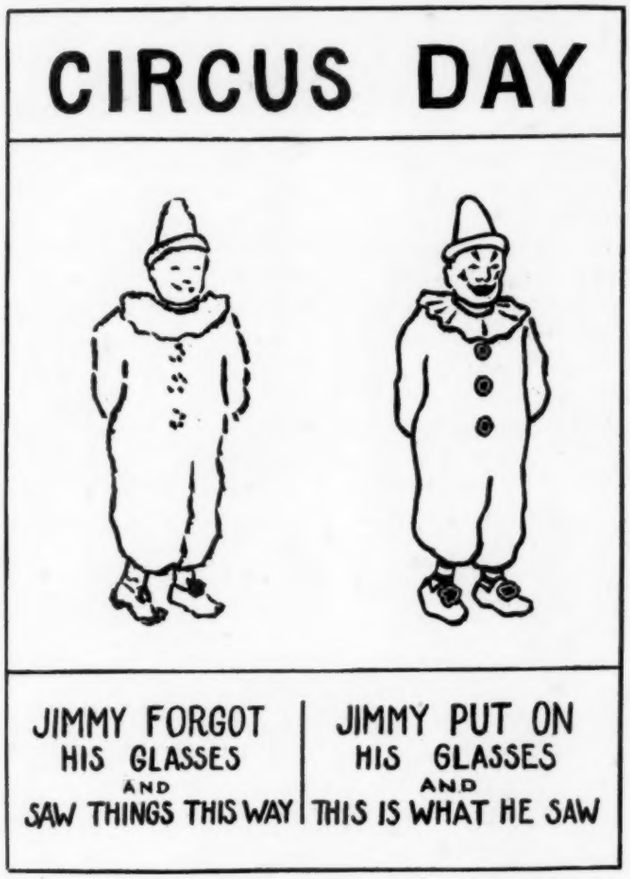
about the subject. He said he would. First he talked about school living conditions. Seems he's all the time trying to have the school buildings well heated and lighted, and just as healthy for the children as our home is. Seats have to be the proper size, and he doesn't want shiny surfaces because they strain the eyes. Everything has to be kept just as immaculate as possible. He's got a lot of little details to look after that you or I would never think of. It seemed as if that alone was enough to keep him busy.

"Then he said the teachers, nurses, and doctors were always on the lookout for diseases like measles, mumps, diphtheria, and scarlet fever so that the children could be sent from school before others could catch them. He said if we would look after our children as well at home as they do in the schools, these diseases wouldn't be so common. He showed me a street map on the wall of his office that has a different colored pin for every case of each contagious disease, so that he knows all the time just what locality to watch for outbreaks. He said one trouble he finds is parents trying to hide the fact that their children are sick and so making others liable to get the disease. He also told me they're doing a test—he called it the Schick test—to find out whether children are safe from diphtheria, and if they're not, he says they can be made so by injections of special material, which is practically harmless. Remember we laughed and threw away the slip he sent us to tell us about it? I never read it and I guess you didn't. He's going to test Charles next Saturday morning as a special favor, although he loses a trip to the country by doing it. He does it free too.

"He told me that while we'd always see cases like itch and lice he's able now to get them under treatment at once, and not only protect others, but get the child with the disease cured and back into school in a short time so that he doesn't have to lose his promotion.

"'Now,' he said, 'We're going to talk about Charles. I know you've felt I'm meddling.

Lots of others have, too. I expected to see you down here for a talk, just as your rich neighbor was a while ago. Here's the situation. You know perfectly well that you have the auto overhauled regularly and painted and fixed up. Charles, or your wife, or yourself wait till sickness comes before being examined. We know many parents won't spend the money as yet to have the examination, and so that the children won't receive physical damage without their parents' being warned, we look them over regularly as much as the law and the parents will permit us, test their eyes and ears, look into their throats and at their teeth, listen to their heart and lungs, examine them for flat-feet, see if they stand as they should to permit proper functioning of their organs, and then when we've found out their faults we try to help correct them.'



They learn about eyesight conservation in drawing class.

"Then he went on to say that if a child doesn't stand correctly or is letting his body develop in an unbeautiful shape when a little attention would make it symmetrical, they can give him special instruction, but there are certain things that are up to the parents, and that is why the school office sends out notices telling them of troubles that need fixing up. Then he said, 'Charles has had trouble with his tonsils for two years. We let you know, but nothing came of it. The nurse called twice, but found neither you nor your wife at home. Meanwhile Charles has been absorbing poisons from the tonsils, he gets colds all the time and has been out of school so much that it is doubtful if he can be promoted, and now we find he is beginning to lose weight. Your visit came none too soon if you want to avoid danger with Charles. Oh, you are not the only one. Parents are just beginning to see the point.'

"Then he went on to say, 'Incidentally we've been teaching Charles how to take care of himself physically, how to clean his teeth, when to go to bed, to keep his windows open at night, to eat proper food, to drink water and milk and thus become as healthy as possible. We do it in his language class, where he reads about keeping his body clean, and when he takes his drawing lesson sometimes he draws a bottle of milk, an open window, or a tooth brush and paste. He likes it, too. He was mightily disappointed when you laughed at his telling you he should have his windows open at night. You told him the night air was bad for him. Fact was, he knew more than you did about it.'

"'Now what you want to do with Charles is what you should have seen to a year or more ago,' the doctor said. 'Take him to your family doctor or a specialist and get an opinion as to having his tonsils out and building him up. We'll help all we can at school. Perhaps if he needs it we can put him in a special class where he can have lots of rest and fresh air. Incidentally, do you know he's needed glasses for six months?'

"Well, Mother, I began to see we had been all wrong because we really hadn't looked into the thing. It wasn't very business-like for one of the town's 'big business men,' was it? I told him I regretted we had not cooperated and he merely gave my hand a good shake and said, 'You understand we are not trying to meddle in your affairs; we are merely trying to help you make Charles as healthy as possible, and, anyway, since you pay for it with your taxes, you shouldn't lose your chance to use our services!'

"I haven't told you all though; he's coming to dinner Saturday and will go to the country with us for the week-end, because if he's going to miss his fun for us—well, I like him anyway, and he's doing a wonderful work."

Consider the Children in an Apartment

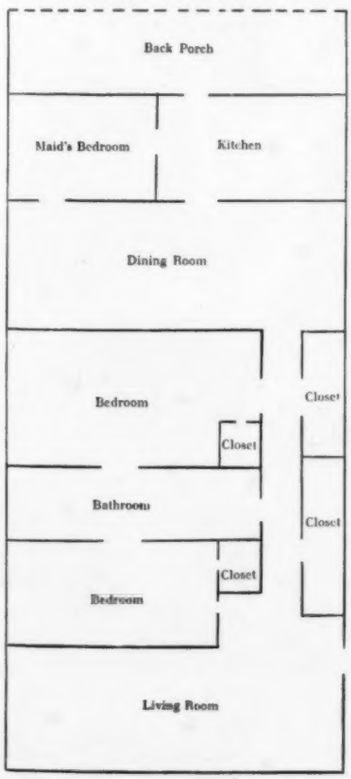
HAROLD A. ROSENBAUM

THE welfare of children is seldom considered in the arrangement of houses and apartments. Even when plenty of light and air is provided and the general arrangement, such as of living rooms and closet space, is good, the plan is rarely, if ever, studied by architects or parents in relation to the health of children.

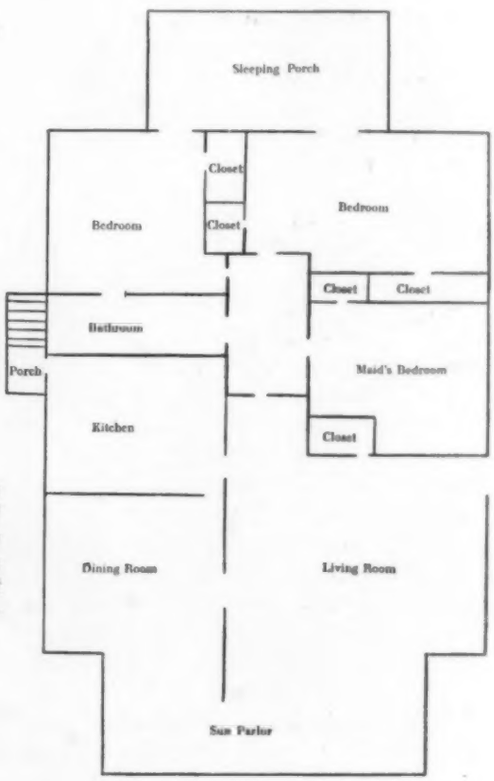
With the increasing number of apartments, there is some possibility of selecting the best type, if the prospective tenants have definitely in mind their children's essential needs. These are fresh air, sunshine, wholesome food, and adequate rest. Rest is rarely given its full importance in the American household. It is in sleep that growth and repair of the human body takes place, and children therefore need a much greater amount than adults. They require much longer daily rest periods and more hours of sleep at night than the strenuous American program usually allows. Some parents who have the best intention of giving their children the correct amount of sleep, however, often find that the plan of their apartment or house is a definite handicap.

In the objectionable type of apartment, the bedrooms are usually closely connected with the living room. The sleeping rooms do not have enough air or light and they are too noisy for quiet rest for children. The first diagram represents such an apartment which I recently visited. There is but one window in the front bedroom; this necessitates ventilating through the door also. The room is occupied by two bright and high-strung children, a boy of seven and a girl of five. As there is frequently company in the home, these children are often awake far beyond their proper bed time. The father and the mother in the family are intelligent, and would do anything possible to help the children. The difficulties that relate to the arrangement of the apartment, however, are hard to surmount.

Another apartment that has an almost ideal arrangement from the standpoint of children's welfare is shown in the second diagram. This apartment has the dining room, kitchen, living room, and sun parlor in the front. A door separates these front rooms from the bedrooms, so that there may be guests in the fore part of the house without disturbing the children in the rear. Both apartments are located in the best residence section of the city of Chicago; despite the fact that the second is much more desirable than the first, its rental is ten dollars a month less.



In this apartment the bedrooms do not have enough air or light and they are too near the living room to allow the children quiet rest before their parents go to bed.



The bedrooms in this apartment are separated from the front living rooms so that children and parents can be at peace during the evening.

The Plague of the Tenement

JAMES LINCOLN McCARTNEY

"GOD be good to us, but it's a haunted house," an old woman murmured as she crossed herself. She was watching a coffin being brought down the steps into more sunlight than its occupant had ever seen in his home in a New York tenement. "Seventeen! Eight families, and this is the seventeenth brought out of that door. God be good to us."

This is the cost of crowded tenements.

Two hundred and four cases of tuberculosis occurred in twelve New York houses in eight years, and these were only direct cases. Who can tell how many persons were infected from the poor wretches dying in those narrow quarters? During 1914 in Chicago, 10,000 cases of tuberculosis were reported to the health department; 3,909 of the victims died. Undoubtedly, only the more pronounced cases of the disease were reported, and "a safe estimate of the total number of cases of tuberculosis in Chicago would probably be 20,000."

Do the photographs that help Dr. McCartney tell his story make you shudder? They are the homes of people who came to this country to escape the squalor of their homes in the old world. New York cannot be judged by its Central Park and Riverside Drive, nor Chicago by its Lincoln Park and North Shore. A city is no better than its poor districts, and a country no better than its cities.

The Toll of Disease in the Slums

Yet tuberculosis is only one of the diseases that flourish rankly in the slums. The crusade against it has been carried on most bitterly, but the authorities tell us that the disease can never be stamped out until we disintegrate the crowded masses of the city. "The prison of the state and the prison of the slum are our two most overcrowded centers today." According to Dr. Knopf, mortality from tuberculosis among prisoners is three times as high as it is among the general population. Next to the prisons in providing fertile soil for the spread of this disease comes the usual home of the American workman in the cities, the tenement house.

In some of the tuberculosis exhibits hangs a light that flames and fades twice every minute, one hundred and twenty times every hour. Above it is a placard: "A human being dies from tuberculosis each time this light goes out."

We know today that in cleanliness and direct sunlight the micro-organisms responsible for the death of the victims of tuberculosis die in a few hours. In cleanliness and the ordinary diffused light of a light room, they die in a few days. In darkness, dampness, and filth, they live long. In addition we know that tuberculosis is a contagious disease, and that its spread is greatly assisted by the overcrowding of persons and by bad air. The reason why houses are haunted by the dread plague lies open to all who know the lack of space, air, and light in the slums. The windows in these districts are usually stuffed with rags and paper to keep out what little air there might be. Few rays of sunlight ever reach over the high roofs of the tenements to fall on the cloudy panes. Many are the rooms where sunlight never penetrates. New York alone has more than one thousand dark living rooms, absolutely without windows; the same proud city has a little less than 300,000 living rooms without sufficient light or sunshine. More than 25,000 New York families live in basements below the street level.

Our foreign critics tell us that we Americans will do anything for money, and it is no doubt true that the strongest argument that can be presented is the fact that taxes are being used needlessly. It has been found on investigation that "preventable disease has cost New York from $37,000,000 to $41,000,000 a year for the last four years"; $166,248,408.24 is the total estimated wealth that has been poured out in these four years for wasteful pain and suffering. For millions of that great total the tenement house is directly responsible.

The Problem of Race Prejudices in Housing

We find that immigrants to this country are at first timid; they are not assimilated in the "melting-pot"; they seek members of their own nationality, and so settle down according to races. Divisions of this sort make housing problems in the United States more complex than in many European cities. Model tenements here cannot receive tenants chosen at random in the same manner as can those in Berlin or London. Differences of race and type, even differences of locality forbid, for the Italian from the north must have his quarters separated from the Italian

from the south, and one tribe from "that strange mixture of races called Russia" may be ancient enemies of another.

The Tenements of New York

If the immigrant family remains in New York it stands the least chance of a happy and healthy life, for it is reported that 122 blocks of that city have a density of 750 persons to the acre, and thirty blocks have a density of more than 1,000; since this report, the number to the acre in some districts has risen to 1,600 and 1,700. But these figures mean little to the casual reader. A few comparisons will make the situation clear. "Assume that you are in a suburban house, with a lot sixty by seventy-two feet. That means ten houses to the acre. Think of the ten houses immediately around you and see whether they will average more than six persons to each house. If not, there is a density of sixty to an acre." If you are reading this in a four story apartment house, as they are generally built today in the better part of the city, and every apartment contains an average of five persons, you are taking your part in producing a density of about 300 persons to the acre. This is really too crowded. What is the result when you place 1,000 or 1,500 persons where there is scarcely room for 300? In New York today there is acre after acre in which 1,300 persons live crowded lives; where there are ten persons to every seven rooms; where, instead of the minimum of 880 cubic feet that is really needed, there is only 400 cubic feet of air for each adult and 200 for each child; where only one room of four receives direct sunlight.

The Immigrant's Home in Boston

The newcomers who go to Boston have a wider choice, but they may find lodging in certain quarters of the city where the conditions are as bad as in New York. There is more opportunity for proper housing, should American surroundings so improve the family's financial condition as to enable them to move into the more accessible suburbs. Although

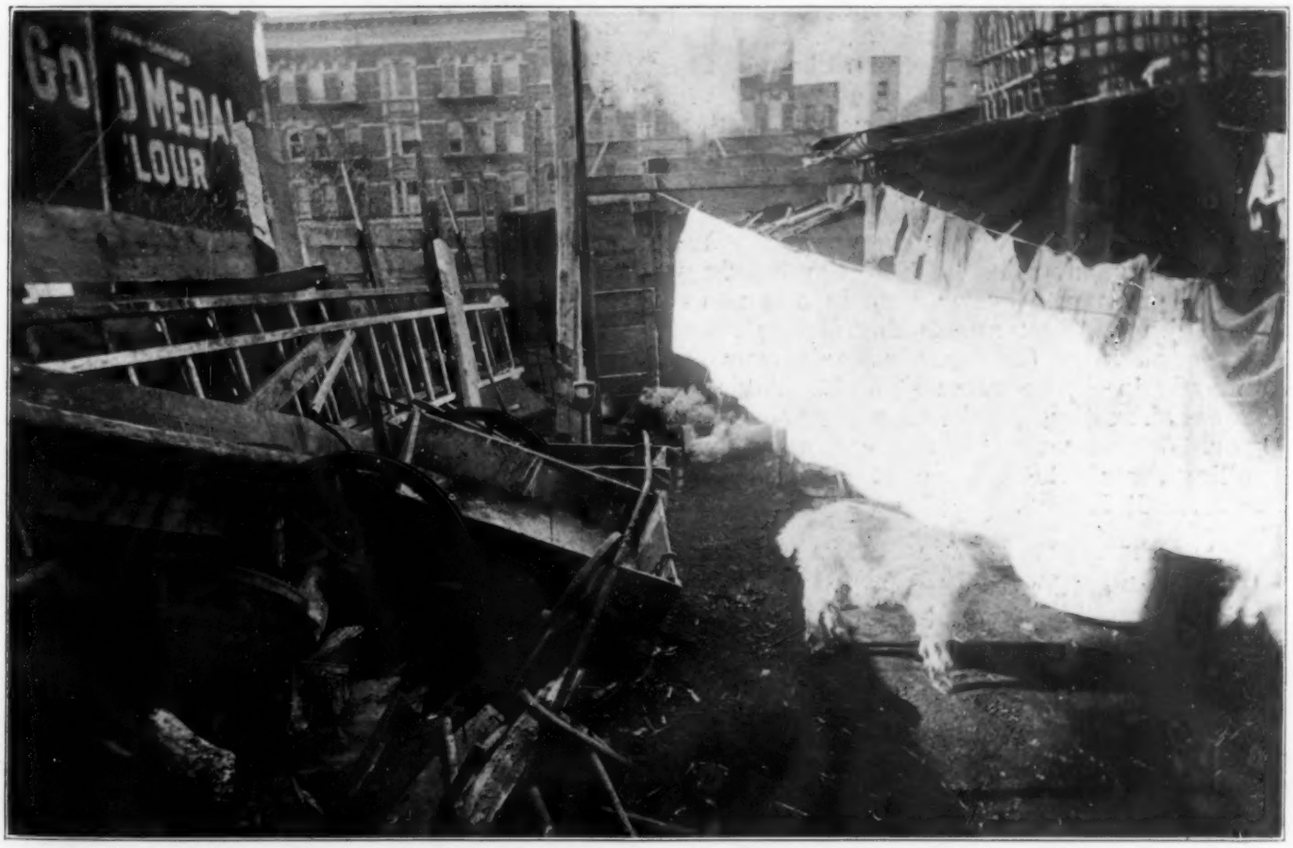
More than a dozen persons live in these two rooms in a tenement in New York. The air can be imagined better than described.

This was one of the worst apartments in New York until the health authorities renovated it and brought it up to regulations.

Six adults live and sleep in this one room in the New York Bowery. When the beds are all open there is barely room to move around the room.

This is the kitchen, living room, and bedroom of a six person family in New York's congested district. Many of the worst of such places are within sight of the statue of liberty.

This woman is in the last stages of tuberculosis. She never had the means and knowledge and does not now have the strength to make her living quarters less wretched.



A back yard in the New York tenement district. But the people who live here are fortunate to have this much space instead of only an alley way onto which the back door leads.

This is the only toilet in a four story tenement in New York that is occupied by more than twenty families.

the houses in the slums of Boston are not built so high as those in New York, the conditions are no better, for there are 1,143 persons to the acre in the three and four story houses in the north end of Boston, while there are 1,672 persons on an acre in the five and six story houses in New York.

The Poor in Chicago

If the family should study matters a little before it settled down, no doubt Chicago would seem a free and open city to choose, for the reported average density of Chicago is only 21.09 persons to the acre. But they would be greatly misled, for although Chicago comprises more than one hundred and twenty-two thousand acres, thousands of these acres are but sparsely settled, while others in the center of the city are overcrowded. In an investigation of six selected city blocks it was found that the tenements had three persons to a room in half of the buildings, and two persons to every room in a fourth of the buildings. That means that if two rooms are occupied by four persons, all four are commonly in the bedroom at night. Added to this overcrowding is the tendency to cover 80 or 90 per cent. of the entire lot with dwellings, and the chance of air and light grows small indeed.

Philadelphia and Buffalo

Philadelphia, the vaunted "city of homes," specializes in "one-room housekeeping apartments," where whole families, often of from four to seven members, eat, sleep, cook, and live in the one room. Buffalo has a Polish quarter, where buildings are chiefly small, individual, wooden houses seldom more than two and a half stories high. This city offers an interesting proof of the fact that overcrowding is not the result of high brick tenements. For in these frame houses live thousands of Poles, who crowd together like bees in a hive. Two, three, four, five, even six and seven families gather under the same roof in these small houses, whose space is no more than sufficient for a single family. "Such buildings, however, have one great advantage over the ordinary tenement. They are open to the air."

The Slum the Quicksand of the City

"The various characteristics of the slums, high death rate and premature old age, moral degradation, drunkenness, and thriftlessness, difficulty of family life and utter lack of community spirit, are produced by a mixture of causes. The tenement house and its allies are not alone responsible for all these things. Poor food, water, and air, drunkenness and gambling, each of these plays its part; but overcrowding is a powerful factor which is the genesis of many other evils. So long as the slum exists, the piers of our city structures must rest on quicksand."

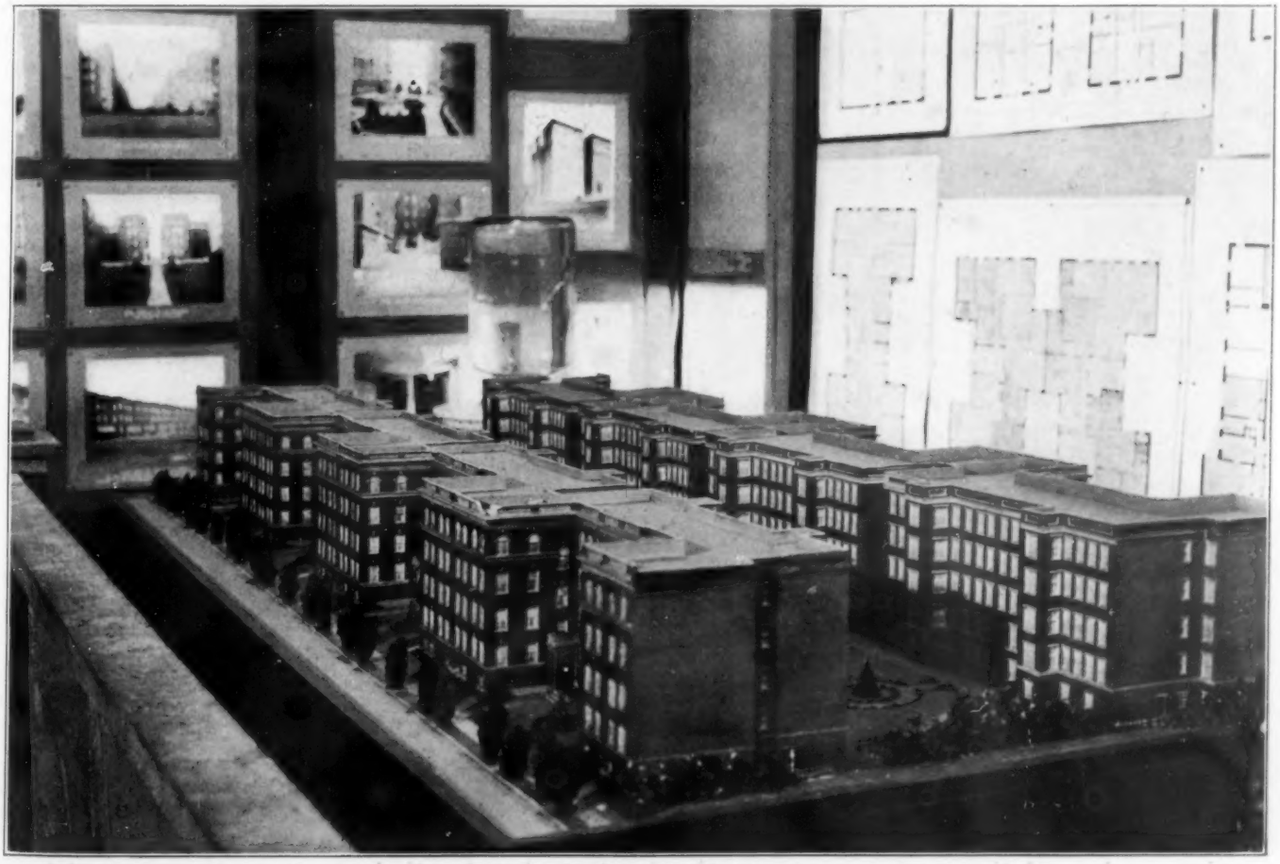
The Shame of Our Cities

Any one who has been watching the trend of events during the last few decades must have noticed the migration of the population. Many thousands have gone from the farm, where each householder controls his own supplies, to the life of the city, where no man controls the sources of the necessities that enter his household. With this change has come the recognition of the fact that since each citizen can no longer guard himself or his family, the municipality must have servants of the public who can guard each individual by their guardianship of the whole.

Among the more general housing regulations, there are two for which the city is especially responsible, the service of municipal water and protection against fire. That such primary necessities of existence as water closets should be used in common by whole tenements is one of the great shames of our

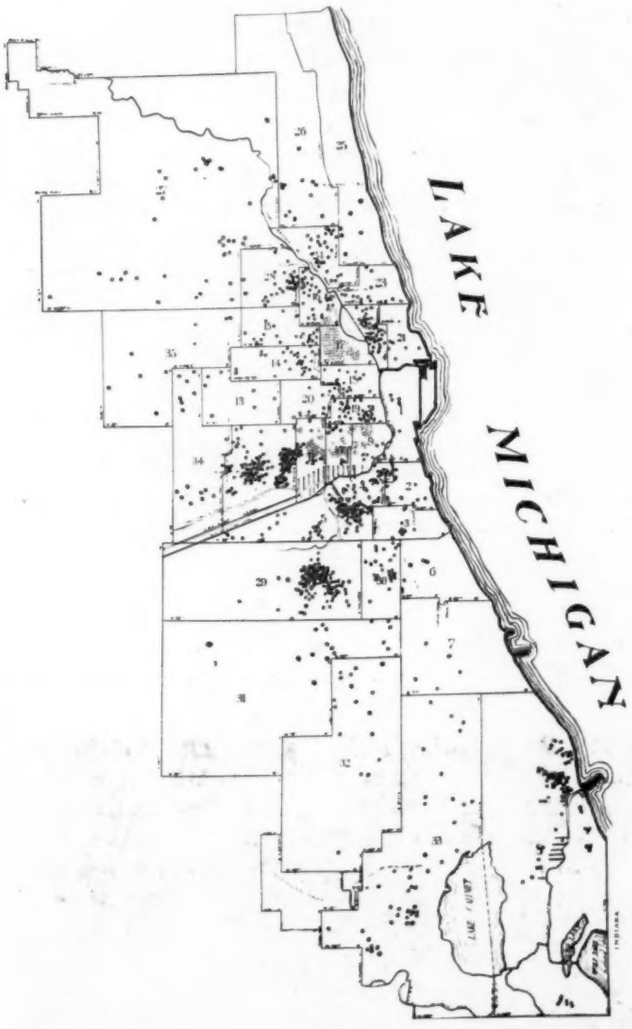
Eight adults sleep in these two small rooms in one of New York's tenements.

The fronts of these houses by no means tell the story of the congestion within. On holidays the streets are literally a "sea of faces" that surges backward to let the occasional vehicle pass.



A public health exhibit of model tenements. But in some cities even apartments of this height and allowance for air are not considered near enough the ideal to be recommended.

communities. There are numerous tenements today where water has never been put in above the first floor. Although cleanliness is not necessary to existence, as has been proved by the slums for many years, it is necessary to healthful life. The health department in Chicago has partially met this problem by providing public baths in the crowded districts of the city. "There are maintained eighteen public baths located throughout the poorer and tenement sections of the city.



The 1,252 spots on this map represent the deaths from diarrhea among children less than two years old in Chicago, during July and August, 1910. The spots are thickest in Chicago's tenement district; the group in ward 29 clusters around the stock yards; the line that runs southwest follows the poorest Jewish quarter; and the group farther north and to the west is located in the Bohemian and Polish quarter. Since 1910 health conditions have so changed through the work of city health authorities and private organizations that the toll of lives from diseases of infants, as well as of all other infectious and contagious diseases, has been greatly lessened.

These baths are free and there is no restraint on the number of times a person can attend. They are open four afternoons a week for men and boys and twice a week for women and girls." In 1922, 794,111 baths were given; 253,304 of these at a charge of five cents each to cover the cost of a clean towel and a cake of soap.

The Task for All

Health workers in the United States have been greatly handicapped in the carrying out of many of the reforms that have been found necessary. They have nevertheless been waging a war for better living, and while they have been limited in their campaign, they have been striving to educate the general populace in the ways of living, and thus to unite their forces. A good example of their methods may be seen in the "war-office" of a modern city, such as Chicago or New York. On the walls of the "headquarters of the fight for health" are a number of "spot maps" that show the location and density of the various diseases, which are represented by various colors. There is but little color in the suburbs, where whole districts are free from blemishes. But in the center of the great city the stains group closer and closer together, and they are "deep upon the slum."

Private citizens can do much to aid in a movement for better living conditions. The wonderful work of the tuberculosis exhibits can be duplicated by good housing exhibits prepared by societies interested in civic reform. Cooperative societies have fully as great a chance to build model houses here in America as they have in England, where so much has been accomplished. Capitalists, who desire to aid the poor by methods of self-help, may find work ready for their hands. Labor unions, which have done a large part of the work so far accomplished, can do much more. The greatest necessity of all is for a constant persistent campaign of education.

The primary trouble that has delayed much of the reform that was planned in the past is the fact that the American cities have not shown sufficient care in the selection of public servants. Moreover, they have not given the men they have chosen the necessary freedom from political control. They have been slow in passing new protective laws. They have not provided appropriations for enforcing laws already passed. It is not too much to ask that the men who are to guard the health of the community should be trained for that work, that they should be free from political control, and that they should be supported by carefully framed laws, enforced and made available by sufficient appropriations. It is the great task of the coming years to educate the people of the cities to the point where they will demand not only health for themselves, but also for their brothers; not only life for their own children, but for all children.

Why Is a Child Always Hungry?

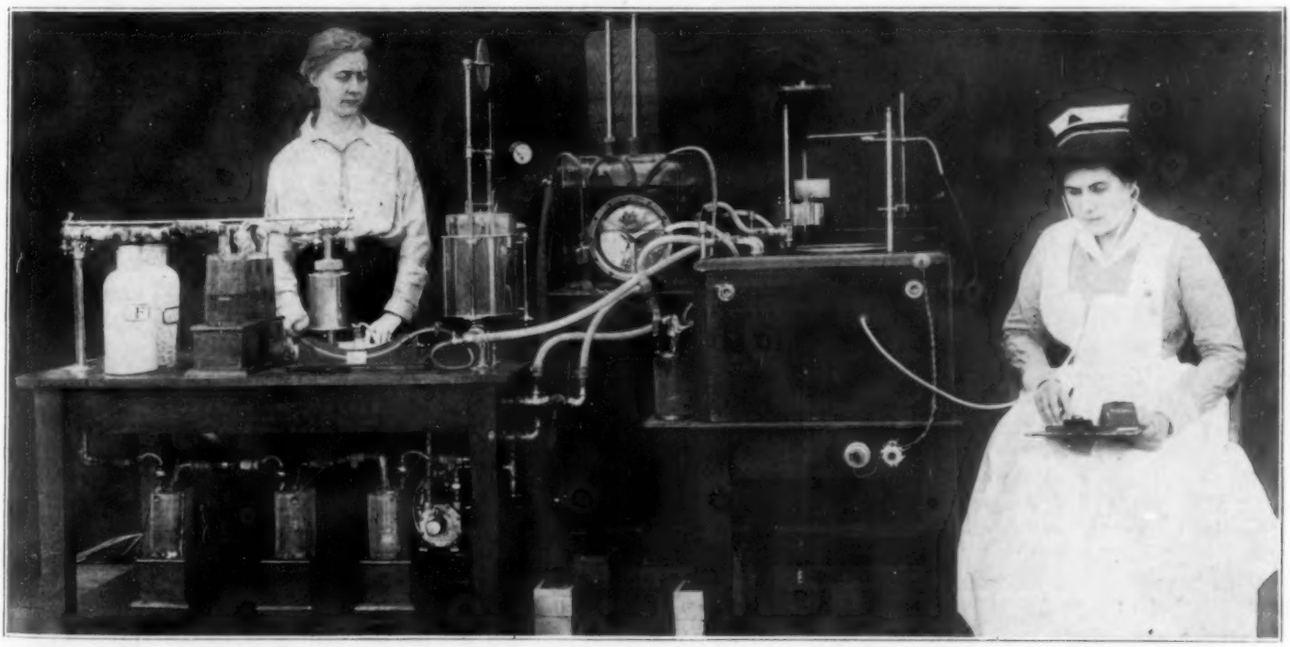
FRANCIS G. BENEDICT

YOU don't need to tell the mother of a large family that children need large amounts of food. She knows it. The appetites of children seem, at times, insatiable, for many a twelve year old boy eats twice as much as his father, who has double his weight. What is there in the child's life that makes so much food necessary? As a result of many measurements of the food needs and muscular activity of adults it is known that there is a very close relationship between a person's activity and his need for food.

Food Is Fuel for Exercise, Growth, and Internal Muscular Activity

Every muscular motion results in the giving off of heat; consequently after severe exercise one is hot and perspires, and the face is flushed. The Canadian lumberjack, tramping through the snow in the cold, piercing winds, chopping and sawing large trees, gives off six or more times the amount of heat given off by the equally heavy but sedentary banker in his well warmed office, to which he journeys in his limousine. As children are normally very active, they give off a great deal of heat, and as the heat must be produced either from food or from body substance, they must, in order not to lose weight, eat a great deal. Full activity, high spirits, active vital processes are a child's best inheritance. The play instinct is natural in the child. Food economy has no place in his life. A rosy, chubby, active baby and a well built, sturdy boy are normal. The emaciated, listless child is not normal. The latter needs and burns up less food than the former. Many of the children of Vienna have only one good meal a day; they cannot be an active and romping set; the meager food they get just suffices to sustain them in listlessness and depression, in no sense a normal life for children. While the gasoline power saw and lumber tractor may replace the work and thus some of the food needed by the lumberman, and the banker may frequently well afford to live on less food, no substitute can be offered to meet the needs of the active, growing, healthy child. Exercise is needed for proper development of frame and muscles, heart and lungs. This exercise calls for heat, and heat comes from fuel, which is food, and thus we have in part an explanation of the tremendous appetite of the child.

In addition to the food needs for the intense juvenile activity, there is the important factor of growth, for the growing child absolutely



By means of this intricate machinery the food needs of children are tested—without any discomfort to the child, who lies quietly in the box-like respiration chamber to the right. The apparatus to the left measures the amount of carbon dioxide produced and the oxygen consumed during the process of breathing. The pulse rate is counted and recorded regularly, since it is an excellent index to the amount of heat being produced.

must have an extra supply of food from which, by the processes of digestion, material may be absorbed, and then in the elaborate body machine again reconstructed into body flesh, fat, and bone.

Two demands for food, muscular activity and growth, are more or less obvious, but recent studies of children have shown a third, less easily observed, special demand for larger food intake, that is, the specific high internal vital activities of the quiet, resting child. Even in quiet sleep there is internal muscular activity, such as that of respiration and heart action, so that heat is being produced and given off incessantly, though of course in much less degree than during exercise.

How Food Requirements Are Measured

When the body is quiet, when the child is asleep in bed, the heat given off represents the minimum demand for fuel to keep the body warm and properly functioning. To measure the heat given off directly is exceedingly difficult, but both the amount of oxygen taken out of the air by the lungs in breathing and the amount of carbonic acid gas given off by the lungs tell very closely how much heat has been formed by the combustions or oxidations in the body, which gave rise to the heat formation. By putting a baby in a comfortable crib in a well ventilated, trunk-like copper box and measuring the air as it is blown through the box, we can measure exactly the amounts of oxygen absorbed and the amounts of carbonic acid gas produced, and thus the heat given off. To supply this heat, food must be given, and the value found for ten hours in bed, for example, is the smallest amount of fuel on which the baby can survive, without, however, any provision for activity or growth. For activity and for growth more food supply is needed. Still, measurements of the "irreducible minimum" value are of the greatest importance in studying and comparing children of varying ages, and, indeed, in comparing children and adults, for muscular activity must be ruled out, as no two persons would have exactly the same degree of restlessness. Hundreds, if not thousands, of tests have been made on babies, young children, girls, and boys, and men and women, the results of which may be found in full in Publication 302 of the Carnegie Institution of Washington, Washington, D. C., entitled "Metabolism and Growth from Birth to Puberty." Indeed, many babies less than an hour old have been studied successfully. In certain instances the food needs of the same child have been studied from birth to about three or four years of age by placing the child in the apparatus every two or three months. As a result, the heat production of a quiet, resting girl baby, one year old, can be compared with that of a woman, and the very great disturbance of unequal muscular activity ruled out.

The Child's Need and the Adult's Need

To compare men with boys and women with girls, even when all studies are made during absolute repose, is not simple, for men are larger than women and boys, and women are larger than girls. Thus, even during sleep, a large man would of course give off more heat than a small boy, for he is a much larger organism with larger muscles and more heart and lung action. But it is possible to compare two persons of the same size, but of different ages. Thus, how does a one hundred pound girl compare in her minimum food need with a one hundred pound woman? Does a one hundred and fifty pound man give off twice as much heat as a seventy-five pound boy? These and similar questions may now be answered correctly, and the simplest comparison is made by dividing the heat by the weight of the body and expressing all values as the heat to the unit of weight, that is, to the pound.

How does the heat production of children compare at different ages and how does it compare with the same unit of weight of adults? Very small babies, shortly after birth, have a very low heat output, but at the age of one year they have the highest of the whole range of life. A baby one year old produces to the pound of flesh twice as much heat when quiet and asleep as does a quiet, full-grown man. Boys have a much higher heat production to each pound of body weight than men, and the average seventy-five pound boy actually will need 40 per cent. more heat to each pound than the one hundred and fifty pound man, who, though twice as heavy, would by no means need twice as much total food as the boy, but only about 50 per cent. more. Since girls have a much higher heat production for each pound of body weight than women, the quiet one hundred pound girl, asleep, needs more food than the sleeping one hundred pound woman. Girls and women require somewhat less food for each pound of weight than do boys and men of the same weight, even during quiet rest in sleep.

No wonder children are hungry and eat ravenously! Think of their food demands! They are incessantly active at play or work, and this activity results in the combustion of fuel or food in the body; they need food to supply the material for growth; and finally, they have a higher vital activity even when perfectly quiet and asleep, that is, the fires of life burn more intensely than in adults, more heat is being given off in proportion to their size, and for every unit of heat (a calory) lost there must be corresponding fuel furnished in the food.

Plain Facts About Health and Disease

HEALTH NEWS OF THE MONTH

Starvation Treatment Fails in Epilepsy

For some time a number of physicians and nonmedical workers in the field of health have stated their belief that epilepsy is associated with wrong diet and the accumulation of poisonous products in the bowel. It is, in fact, a common custom to limit the consumption of meat by epileptics on the belief that an excess of protein in the diet favors the occurrence of fits. Recently physicians working in the State Village for Epileptics at Stillman, New Jersey, have tested the effects of varied diets and of fasting on a number of the patients. They found that in many cases the fits decreased in number and that in some they ceased entirely during the fast, but that after termination of the fast the fits occurred as frequently as before. It seems sensible, in view of the results of their experiments, for the epileptic to avoid any foods that give rise to stomach or intestinal trouble, but not to limit his diet too greatly. While it is true that in some cases the number of fits is less during starvation, there is no justification for the claim that this measure is in any sense a cure for the disease.

Match Box Dermatitis

Dermatitis is inflammation of the skin. The causes of inflammations of the skin are varied; any chemical substance coming in contact with the skin, if of sufficient strength, will bring about irritation. There was a time when matches were made with white phosphorus, but there were so many cases of poisoning resulting that the United States passed a law in 1912 that placed a prohibitive tax on such matches, and made their importation and exportation illegal after January 1, 1914. White phosphorus has been replaced in this country, however, by another form, phosphorus sequisulphide, a combination of phosphorus and sulphur. This substance, though not so poisonous as white phosphorus, is irritating to the skin. In France, people who work with these matches are required to bathe the eyes and douche the nose with baking soda solution in order to prevent bad effects.

At various times physicians throughout the world have reported cases of irritation of the skin from matches and from match boxes. Now a skin specialist of Milwaukee has reported similar cases in this country. By carrying a safety match box in the hip pocket for three days during hot and humid weather, he produced an inflammation of the skin in that region. Besides he saw, in his practice, six cases of irritation of the skin resulting from matches or match boxes. The eruption from irritation due to match boxes usually appears on the thigh, and in addition to the eruption there is inflammation and itching and sometimes exuding of fluid. The skins of some persons are naturally more sensitive than those of others. Match box dermatitis can, of course, be prevented by properly encasing the match box in a covering, by carrying matches and boxes in coat pockets instead of in trouser pockets, and by similar simple measures.

The Dreyer Antituberculosis Vaccine

We have commented previously on the vaccine for tuberculosis prepared by Dr. Georges Dreyer of England. The vaccine was made by treating the organisms that cause tuberculosis with various chemical substances that remove the fatty capsule and leave the protein part of the organism. Dreyer and his co-workers used the vaccines in a number of cases, and, while the results were encouraging, it was the general opinion of the medical profession that the vaccine ought to be regarded as in an experimental stage. Recently Professor Fornet of the Institute of Microbiology in Saarbrück has indicated that experiments along the same line made by himself and by Professor Wassermann in Germany have seemed promising. Their experiments antedate those of Dreyer, but the preparation of the vaccine was not the same as that followed by Dreyer. Professor Fornet is inclined to believe that Dreyer's method of preparation may break up the protein of the bacillus of tuberculosis so that injection is essentially the same as the injection of a nonspecific protein. This is, of course, a technical matter. It is known that the injection of any foreign protein substance may cause a reaction in the body, marked by fever and an increasing number of white blood cells, and that this reaction is sometimes markedly

beneficial in various diseases. Such a reaction is nonspecific, because it is a general body reaction against disease. It differs, for instance, from the way in which smallpox vaccination or diphtheria toxin-antitoxin or antityphoid vaccine act, because these treatments confer specific protection against the diseases mentioned. At present, the Dreyer vaccine is to be regarded as still a matter for careful investigation and not as a cure for tuberculosis.

The reader will see that medical scientists are alert in studying these new problems and in testing all new investigations to make sure that they are both theoretically and practically sound. It is an evidence of the actually scientific character of modern scientific medicine.

M. F.

EL ZAIR—THE LATEST ELIXIR OF YOUTH

VOLTAIRE said that the charlatan was born when the first fool met the first knave. Since that remote period charlatanry has developed in finesse, and today it flourishes almost as well on the wise as on the foolish. The more intelligent and well-to-do part of the public has been circularized recently by the somewhat imposingly named "American Laboratories," New York City. The concern sells "El Zair," an elixir of youth, which, in addition to its alleged rejuvenating powers, is invested with many other marvelous qualities. The story of the discovery of El Zair is worthy of the best efforts in that line of fiction classified as "adventure." The ingredients of the elixir are said to have been procured originally from "certain lofty and almost inacessible mountain ranges in Africa." But the story of the discovery of this marvel is tame when compared with the story of what it has accomplished. We are told that it has brought back to life a dying consumptive, that it has grown hair on the bald head of a septuagenarian, that it has cured the tuberculous knee joint of an American millionaire, that it has enabled a "noble lady who had long since given up all hope of presenting her lord with an heir" to become a "happy mother," and that it has rejuvenated a "member of a great ducal family." Testimonials are forthcoming from lords and ladies and royal highnesses. El Zair can be purchased for the ridiculously small sum of $6.00 for six weeks' "treatment." Some "treatments" were purchased and subjected to analysis in the chemical laboratory of the American Medical Association. Alas! Somebody is always taking the joy out of life. The prosaic and unimaginative chemists reported that this elixir of youth was nothing more mysterious than Epsom salt and vinegar. Should the reader be on the selected list to receive El Zair literature, he can brew his own elixir by purchasing half a pound of commercial Epsom salt and a quart of "white" vinegar. It will rejuvenate and grow hair quite as well as El Zair.

A. J. C.

SAMOAN MEDICINE

PRACTICALLY everyone has his medical superstitions, quaint beliefs that have been carried on in his family for many years. Everybody knows a dozen remedies for colds, for rheumatism, and for headache. There are still persons who carry a potato for pains in the joints and who wear a bag of asafetida about the neck to drive away infection. It is rare that any such practice is founded on more than a superstition. Occasionally, however, among the beliefs of the ignorant and the practices of the savage are found ideas that lead to practical developments by scientific men. For this reason physicians are always interested in studying the medical thought and practice of primitive peoples. In a recent issue of the United States Naval Medical Bulletin, Lieutenant Commander D. Hunt of the United States Navy Medical Corps has described some of the practices of the people of Samoa.

It is the custom of the Samoans frequently to bathe open wounds, sores, and ulcers in salt water. Here is a practice founded on some sound observations, for it is known that bathing in such solutions brings about a flow of serum from the wound which effectively washes out infection and clears up débris. The natives also practice a special form of massage known as lomilomi. The practice is not limited to anyone especially trained in the diagnosis of disease, and Dr. Hunt reports that deaths occur regularly in cases in which patients are suffering from appendicitis, obstruction of the bowel, or abscess within the abdomen. In massaging the sick, the lomilomi operator usually massages only at the site of the pain and keeps up the massage until the patient can bear it no longer. While this may appear ridiculous to the average inhabitant of the United States, there are on record in our own country as well deaths caused by massage too vigorously employed by those not competent to diagnose the disease from which the patient suffers.

The surgery of the Samoan native is, of course, crude. Fifty years ago, before white physicians had come into the country, all sorts of operations were performed, including amputation of legs and even operations on fractured skulls. Today, however, the native physician limits himself to incision in the case of abscesses or other swellings and he uses for these incisions shark teeth, shells, or sharpened pieces of bone. Almost everyone knows that a competent physician in operating in such conditions is careful as to the matter of infection. He thoroughly cleanses his hands or wears sterilized gloves, he cleanses the wound, and he sterilizes the instruments with which he operates. But the Samoan operator does not know these things and the logical result is that nearly all of the patients are brought to the white man's hospital eventually, except those who die from infection or from loss of blood due to the cutting of a blood vessel.

The results of the study of native medicine throughout the world are invariably the same. There is a large mass of superstition and fallacy; there is unscientific surgery; there is massage, and the prescribing of queer concoctions of herbs and other drugs. Such investigations lead inevitably to the conclusion that scientific medicine is probably the greatest boon that any civilized nation may confer on such a people.

M. F.

HEIGHT AND WEIGHT STANDARDS INADEQUATE

GREAT emphasis has been laid during the last few years on underweight in children as an index of malnutrition. In many schools and other institutions, large numbers of children have been weighed; a child found to be 7 per cent. or, especially, 10 per cent. under a given weight for his height and age as set down in a standard table is classed as undernourished. Special steps are then taken to bring the child up to the normal weight, usually by giving an extra ration of milk two or three times a day. In many schools these children have been weighed and classified as undernourished by nurses and often by teachers, without examination by a physician to determine whether or not there are physical defects which have to do with the underweight. That this is not a safe or sound practice is illustrated by the results of an experience in New York City.

A careful survey was recently made of about four thousand children in an Italian district of New York City who were under the care of the Association for Improving the Condition of the Poor. It was found by a physician who has thorough knowledge of children and their diseases that while about 96 per cent. of those who were well nourished were up to standard weight, 75 per cent. or more of the remaining children presented unmistakable signs of malnourishment, although they did not fall below 7 per cent. underweight according to the standard tables, and very few were more than 10 per cent. underweight. The examination, which was unusually thorough, discovered such symptoms as flabby muscles, lusterless eyes, apathy of bearing, poor color, poor posture, and a relative absence of subcutaneous fat. A record was taken of the height and weight. The report states:

> It is obvious that so far as Italian children in the congested district of New York are concerned, the standard tables have little or no value for selecting the undernourished. The use of height and weight tables alone seems to be unsound and misleading. The trouble is that children of average weight may be and often are in poor condition as to nutrition. The failure of the standard height and weight tables in this case may be due, in part, to the fact that the children examined deviate widely from the national type. But the method seems to be unsound in principle. For one thing, the children in this area of New York are considerably below the average in height and weight as shown by the standard tables.

The widespread use of so-called standard height and weight tables as a measure of malnutrition in children, especially those of school age, has been of undoubted service in calling the attention of parents and teachers to the importance of health and freedom from physical defects. Concrete demonstrations of any health defect is the surest method of securing the attention of a mother and of getting her continued interest in the physical condition of her child. The taking and recording of the weight at regular intervals is one of the most effective of such measures because it is simple and easily understood. The charting of the weight curve is readily explained to the most ignorant mother, and as she watches the progress of this curve from week to week, she is in a receptive frame of mind to accept instruction concerning matters of the child's health other than that of mere weight. But the fact that the scales fail in the selection for medical and educational care of these children whose nutrition is seriously impaired suggests that before any standard table of heights and weights is used generally in nutrition work, some regard must be had for the build and the characteristics of children of the definite race stock under consideration. Furthermore, the

failure of the scales in this particular application emphasizes most strongly the need for dependence on a thorough medical examination by a competent pediatrician, that is by a physician who knows children, not merely their diseases, but their special characteristics of mind and body. J. M. D.

CANCER WEEKS

EACH year the American Society for the Control of Cancer conducts a week of intensive campaigning against the progress of this malignant disease. During the week set apart, lectures are given by authoritative speakers, newspapers and other periodicals devote increased space to articles on cancer, and attempts are made to give the public by every known method the facts concerning the disease. Heretofore the campaign has been simultaneous in all parts of the country. This year, in order to avail itself more fully of especially competent workers and in order to conduct the campaign more efficiently, a series of six campaigns will be conducted, and each will continue for four weeks. Three weeks will be spent on active preparation, and the fourth week on the actual public work. The first campaign will be in the northwestern section of the United States, from October 15 to November 15. The campaigns will then proceed, month by month, through the southwestern, southeastern, lake, eastern and New England sections, terminating May 14. This warfare is one in which every man should take part; the enemy is relentless and strikes with a terrible hand. M. F.

HOW THE PUBLIC HEALTH LABORATORIES SERVE YOU

PROBABLY neither the general public nor the medical profession fully appreciates the service rendered them by public health laboratories. These institutions had their beginning about fifty years or more ago, in the evident need of making analyses of food and drink. Before the advent of bacteriology, it was clearly recognized that disease occasionally resulted from the use of bad water or decomposed food. It was evident that the householder could not make analyses of the water supplied by the city or by a water company, and he was equally helpless when a question arose as to the purity of the milk supplied to his family by the dairyman, or of articles of food purchased from the grocer. Everybody admitted that it was a duty of the state or the municipality to protect its citizens from the effects of contaminated water and bad food. Thus public health laboratories came into being, and they have not only justified their continuance, but also made possible their expansion by the good that they have accomplished. These laboratories have greatly extended the scope of their work until now they play a large part in determining sickness and death rates. It is safe to say that deprivation of their aid even for one short year would result in the spread of infectious diseases and in an ascending death rate.

In the Hygienic Laboratory at Washington, manned and equipped by the United States Public Health Service, examinations of vaccines, serums, and other biologic products employed in the prevention or cure of disease, are tested. No person or company can manufacture and sell in this country in interstate commerce any of these products unless licensed to do so by the Surgeon-General of the United States Public Health Service, and such a license is not issued until a sanitary survey of the place of manufacture is made. Further than this, the director of the laboratory goes into the open market frequently, purchases and causes to be assayed all such products on the market, and any manufacturer supplying a product which does not come up to the standard set by the Surgeon-General is liable to have his license revoked and further sale of his products forbidden. In the same laboratory original research as to the causation of disease is constantly being carried on. Some important discoveries have been made with reference to such diseases as pellagra, typhus fever, and bubonic plague.

Every state in the Union, with the exception of Wyoming, has now in full operation under the control of the state board of health a public health laboratory. Many of the states have branch laboratories located so that every part of its territory may have service. Every city of 100,000 inhabitants and many of smaller population has one or more laboratories, to which any physician may send samples of sputum, blood, or any of the secretions or excretions of the body for examination, and receive a report without cost either to him or to his patient. The state laboratories watch the water and food supplies of those parts of the state not equipped with local facilities. A physician in the most remote part of the state may send a swab from a suspected throat, a sample of sputum or of blood, to the state laboratory or to a branch and soon learn whether or not the patient bears the organism

which causes diphtheria, tuberculosis, or syphilis. If the evidence of diphtheria is positive, he administers curative doses of antitoxin to the sick child and immunizing doses to those exposed, curing the infected person and preventing the infection of others.

In cities the service to the people in the prevention and cure of disease by the public health laboratory is supplemented by the infectious disease hospital to which the patient, whether he come from hovel or mansion, may be taken, and in which he will receive the best of care and treatment. The public health laboratory has become an important factor in the prevention of sickness and the lessening of the number of deaths.

V. C. V.

THE NATURE OF CANCER

DURING the last fifty years the recorded mortality from cancer has trebled. This increase can be accounted for in part by a gradual extending of the span of life, for cancer is primarily a disease of old age. It can also be accounted for by the fact that cancer is much more accurately diagnosed by modern methods than it was formerly. It is the opinion of authorities, however, that these two factors do not explain the increase entirely, and those interested in public health are embarking on a determined campaign to arrest the increase by every means possible. In Great Britain the ministry of health recently issued a circular stating in nontechnical language the present status of our knowledge of this disease. The death rate from cancer is not now increasing for men up to forty-five years of age and for women up to sixty years. The most rapid increase, according to British reports, is occuring in extreme old age. The view that heredity plays an important part in the production of cancer has not been substantiated, and it is said that it has not been proved to be of any practical importance in the case of man. Neither can it be said that the use of any particular food increases the liability to cancer or prevents the occurrence of cancer. Cancer has not been proved to be infectious or contagious, and a careful investigation has failed to support the view that there are houses in which cancer is particularly liable to occur. There are certain facts, however, which have been proved definitely, and in the interests of prevention these should be especially borne in mind. There is danger in long continued irritation such as that from a clay pipe on the lip or a jagged tooth. Every form of chronic irritation, pus formation, or ulceration should be treated at once. The public should know that cancer in its early stages is almost invariably not accompanied by pain, and may be painless throughout.

M. F.

WOMEN'S FASHIONS AND HEALTH

THE woman of forty-five, or even forty, remembers with a shudder the lined skirts and voluminous underskirts that were decreed by fashion during her teens. How did she ever manage to exist in them, she wonders? In truth, she could not do much more physically than exist. Perhaps she skated in winter and took genteel walks in summer, but if she did more she was "queer." Now her knickered daughter plays golf, rides horseback—on the cross saddle—hikes, plays tennis, swims, whatever she will. But besides comfort and pleasure there has come another change with the change in fashions and conventional attitude toward women's dress during the last twenty years. As the width and weight of women's skirts have decreased, women's height has increased; and as the size of their waist bands has increased, the severity and occurrence of periodic pain has decreased. This is the conclusion drawn from a study of the physical condition of 21,383 college women during the last thirty years. Stanford University, Smith College, and Vassar College furnished the figures. Their analysis was made by Dr. Clelia D. Mosher and published in the *Journal of the American Medical Association* for August 18, 1923. In the thirty years from 1891 to 1921, the width of the skirt was cut in two. The average height of the women in these colleges has increased 1.2 inches or more. The size of the waist is now almost a fourth greater than was the "wasp waist" of 1891. Periodic pain, according to records available, was reported by only half as many of the women from these three colleges in 1921 as in 1911. These facts, Dr. Mosher believes, may be traced to two great changes in the lives of women: "(1) the change in fashion, making possible the wearing of clothing which interferes less with the hygiene of women, (2) the increased physical activity, which has been brought about by (a) change in dress, (b) development of physical training and sports in the secondary schools as well as in our colleges, and (c) change in the conventional attitude toward these activities of women."

The woman of forty needs no proof of the first statement. In her loose, shoulder-hanging

dress of 1923 she feels the change. In her daughter she finds proof of the second statement. There were few "gym" classes, no "seals" clubs, basketball classes, and walking clubs when she went to school. Now her daughter belongs to at least one such group. Undoubtedly the young woman's love for outdoor exercise and her skill in sports has been partially developed through the efforts of secondary schools and municipal institutions. That this is not just an impression is shown by the report from Vassar. "From 1896 to 1900, 26.5 per cent. of the entering students at Vassar College had engaged in no form of sport before coming to college; from 1916 to 1920, only 0.6 per cent. reported no sports before admission to college." Even the pessimist as to the future of the race should find these facts hopeful, for, granted that women might some time revert to the foolish styles of former years and forego the joys of exercise and sensible clothing—impossible as that now seems—there must be at least a few generations who will inherit the physical blessings of their sturdy mothers.

H. M. H.

THE NARCOTIC EVIL

CONSIDER the greed of the producers of opium! It is estimated that one hundred tons of opium is ample to supply the medical needs of the world each year. The actual production is two thousand tons. The unfortunate opium addicts, therefore, use nineteen times as much as is used by sick persons who need narcotics for relief from unendurable pain. Dr. W. W. Peter, now serving with the Council on Health Education in Shanghai, China, recently returned from a tour through Siam. He says that 53 per cent. of the total revenue of the government of Siam, $30,000,000, comes from the manufacture and sale of opium, a sum of more than $10,000,000. This is greater than the revenue from any other single source, including land and capital tax, railways and customs duties. "Opium in Siam is a strictly guarded government monopoly. One of the sights of Bangkok, the capitol, is a carefully policed, well organized factory where balls of raw opium purchased in India are manufactured into the finished product, neatly done up for sale in metal tubes like toothpaste." The Siamese government intends to decrease and finally abolish this evil, but finds this difficult in the absence of an international agreement. With the producers of opium seeking to promote the sale of their product in every possible way, and with national governments protecting the business for the sake of the revenue it yields, the suppression of this nefarious traffic is a difficult task. The production of opium and of other narcotics throughout the world should be limited, by international agreement, to the amount actually needed for legitimate medical use. The governments should then see that it is delivered only to those who will use it legitimately.

J. M. D.

ANOTHER PANACEA

"FOR ways that are dark, and for tricks that are vain, the heathen Chinee" is not alone in being "peculiar." One remembers the individual who advertised that he was selling, for $1.00, a government-approved engraving of the "Father of his Country." Those who bit got a two-cent postage stamp. Then there was that potential promoter with a device that was sure death for cockroaches. Purchasers received two small blocks of wood. They were told to put the cockroach on one of the blocks, superimpose the other block, and squeeze. At Marquette, Michigan, there is an equally ingenious gentleman who is offering to sell, for the mere trifle of $3.00, the secret of a "Wonderful Discovery" that cures practically all human ailments. He does not sell the remedy; he merely sells the "formula." You can purchase the remedy anywhere; twenty cents, he says, will buy enough to last a month. Our friend at Marquette was originally in the real estate business—doubtless a "realtor with vision." His first approach in selling his panacea was by way of the printed circular route. Then he purchased expensive space in a Detroit newspaper. His "discovery" is based on a personal experience. Until two years ago he "was a wreck"; then he discovered his cure and he can now "go fishing and hunting." He is quite sure that the remedy will "cure the first stage of consumption" and, in fact, "will cure most people of their ailments." Our real estate friend says: "Some doctors would probably pay me a large sum if it could be kept a secret." But some doctors thought that it would be a shame to keep this discovery a secret and sent in the required $3.00. They received a printed slip, about 5 inches by 8 inches in size, describing "Nature's Wonderful Remedy," which had cured our friend of "Nervousness, Heart Trouble, Rheumatism and Catarrh," and would cure practically every other ailment that flesh is heir to. The remedy is "coal oil" (kerosene).

A. J. C.

HEALTH NEWS AND VIEWS

A PENNY FOR A SCHOOL LUNCH

A pint and a half of fresh milk at noon, and a luncheon of meat and potatoes, three slices of bread and butter, and cocoa and milk—all for a penny, is part of Chicago's plan to build her undernourished school children into strong and healthy boys and girls. An hour and a half rest at midday, wrapped in blankets in cold weather, is also a part of the program. In order to facilitate the work, the children are placed in special classes, of which there are already about eighty. It is estimated that in the course of the school year more than 6,000 undernourished children will benefit from the classes. Similar plans are being perfected to help crippled children.

A BETTER CHANCE FOR HEALTH

In 1920 the appropriations for the public health department budgets in the cities of the United States averaged 95 per cent. per capita more than in 1910. This is the statement of W. Thurber Fales of the School of Hygiene and Public Health of Johns Hopkins University, following a recent analysis of eighty-one cities. Milwaukee with an increase of 343 per cent. headed the list. Expenditures for all purposes except construction and additions to buildings were revealed to be 97.4 cents per capita. Health service funds for activities dealing directly with the protection of public health, aside from the cost of hospitals for communicable diseases and sanatoriums, averaged 51.6 cents per capita. Two items, infant welfare and school hygiene, indicate the awakening of the nation to the importance of giving children a better chance to be healthy.

PROMOTING THE USE OF INSULIN

Further development of the use of insulin, the new treatment for diabetes, and an expansion of its usefulness to include patients of limited means who have been denied its benefits because of its excessive cost, have been made possible by a number of gifts of $10,000 each by John D. Rockefeller Jr. to the hospitals of several university medical schools. The fund will be used to increase the number of free ward patients at the hospitals, and to maintain classes for physicians who will study the nature of the extract and experiment with methods of its manufacture and use. Improvements in the production of the extract have already been achieved and the price consequently lowered.

TASTE AND ODOR OF CITY WATER

Safety is undoubtedly the most essential quality of a public water supply, but it is desirable and important that the water be palatable as well. The numerous instances of unpalatability arising in connection with the chlorination of the water supplies of some cities makes the matter of pleasing taste and odor a close second in importance.

Although chlorine usually makes water quite safe without altering its odor and taste, similar amounts of chlorine seem to affect some water supplies peculiarly. It has been found that one of the chief origins of such changes is to be found in the waste products from coke plants and similar establishments where phenol (carbolic acid) and chlorine in contact give rise to chlorophenol, a substance of very disagreeable taste. Cleveland, Milwaukee, Toronto, Indianapolis, and other cities have contended with this problem for a number of years. Recently the output of a pea-canning factory was ruined for shipment because of a "medicated" flavor suggestive of phenol or iodoform, which was traced to contamination by the waste from a coke plant.

Other causes for a similar effect are on record. One was the occurrence of a very unpleasant taste in water treated by chlorine which had passed through a pipe coated with coal tar. Another occurred in the water of an elevated tank freshly painted with coal tar paint. So far as large public supplies are concerned, however, the coke plant seems to be the chief offender, and measures should therefore be taken to prohibit such establishments from discharging any wastes into the water.

BETTER BABIES

The Better Baby Conference that was held at the state fair of Illinois in September was the largest and most successful since it was established eight years ago with a registration of 250. This year, according to the records of the State Health Department, there were 1,455 entries. The services of a staff of thirty physicians and dentists, twenty-five nurses, and about fifty clerks and attendants were required during the conference. The popularity of the "Better Baby" movement is further attested by the rapidity with which it has spread throughout this and other states. Every county fair of importance has its "Better Baby" conference, and many cities even conduct similar "shows."

LEARNING HEALTH BY DOING

Enlisting the aid of school pupils in actually doing things that promote the health of the community is an effective method of impressing on their minds the importance of health and of teaching them some of the ways in which the health department guards its inhabitants against disease.

In Bonham, Texas, the local paper, *The Favorite*, has hanging in the office window a map made by the high school students that shows accurately the results of a complete survey of the city made to ascertain where flies and mosquitoes go forth to do their deadly work. The survey was made last March by the members of the class in biology under the direction of their teacher.

The students, in groups of two, visited every block, lot, and home in the city to discover (1) lots with stagnant water, needing to be drained; (2) pools in which mosquito larvae were found; (3) houses having defective screens or none; (4) pools or rain barrels needing an application of oil; (5) garbage cans needing to be removed; (6) weeds on vacant lots where mosquitoes were bred or harbored. From the information thus gathered the map was drawn by the manual training department of the school on which were clearly shown the conditions present and the places where improvements were needed.

In a district where malaria is prevalent such work as this done by pupils at the receptive high school age, together with illustrated talks on malaria and its transmission by the mosquito, is one of the best ways of informing the student about this serious disease. More important still is the lesson, so impressively conveyed by the students' actual participation in such a campaign, that the health condition of any city or village concerns every individual in it.

WHAT IS THE TYPE OF YOUR COMMUNITY?

ONE WITH PUERICULTURE CENTER

ONE WITHOUT PUERICULTURE CENTER

WHERE
A Doctor Examines the Baby to Detect and Correct Trouble

WHERE
The Only Advice you can get is from an Ignorant Neighbor

WHERE
A Nurse Advises as to Proper Care of the Baby

WHERE
You Have to Solve Your Difficulties Blindly and by Yourself

WHERE
Mothers Use Their Spare Time Listening to the Right Teachings

WHERE
Mothers Indulge in Vices Neglecting the Care of Their Children

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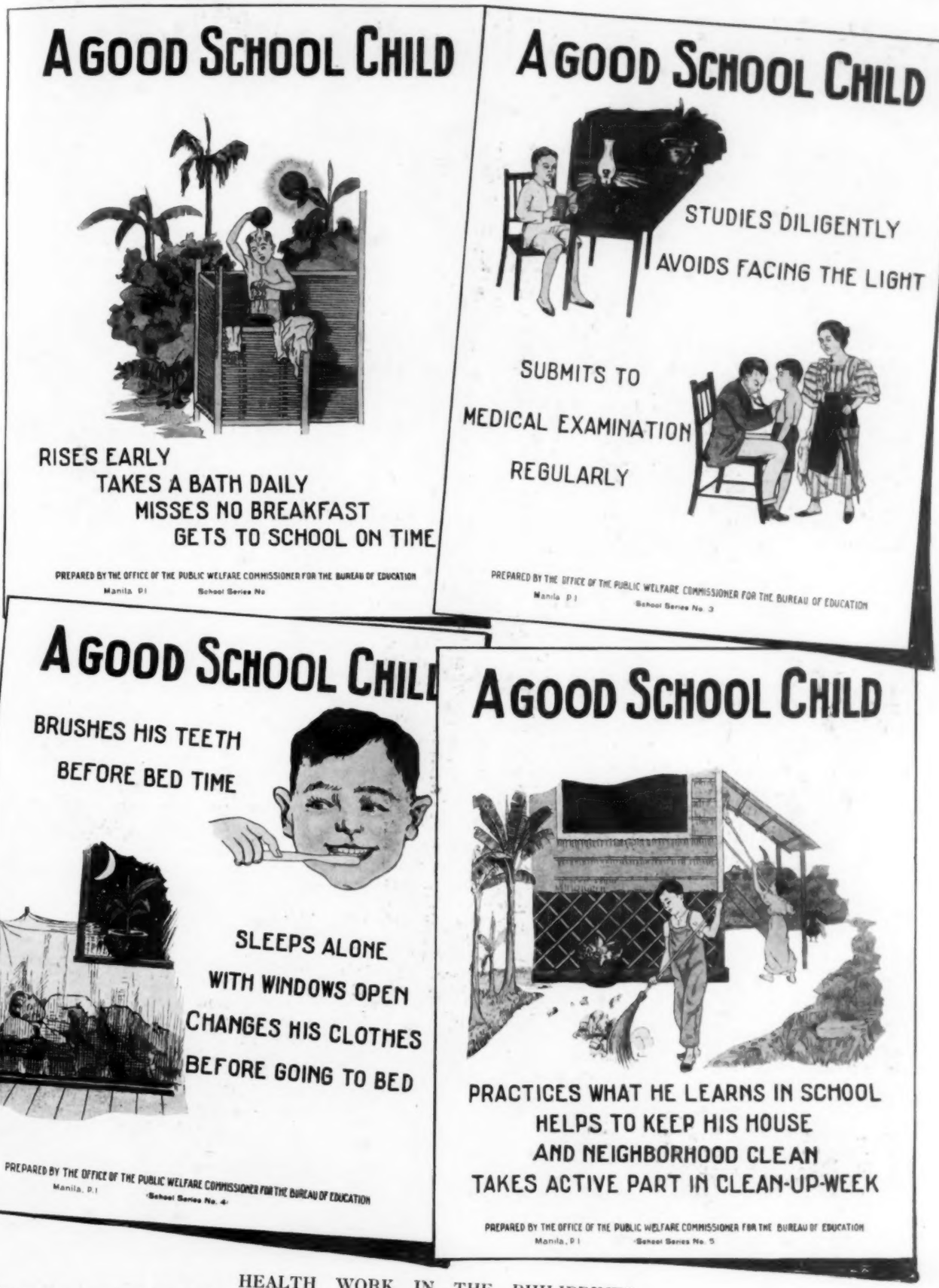
Manila, P. I.

A-Child Welfare Series ③


A GOOD SCHOOL CHILD
RISES EARLY
TAKES A BATH DAILY
MISSES NO BREAKFAST
GETS TO SCHOOL ON TIME
PREPARED BY THE OFFICE OF THE PUBLIC WELFARE COMMISSIONER FOR THE BUREAU OF EDUCATION
Manila, P.I.
School Series No
A GOOD SCHOOL CHILD
STUDIES DILIGENTLY
AVOIDS FACING THE LIGHT
SUBMITS TO
MEDICAL EXAMINATION
REGULARLY
PREPARED BY THE OFFICE OF THE PUBLIC WELFARE COMMISSIONER FOR THE BUREAU OF EDUCATION
Manila, P.I.
School Series No. 3
A GOOD SCHOOL CHILD
BRUSHES HIS TEETH
BEFORE BED TIME
SLEEPS ALONE
WITH WINDOWS OPEN
CHANGES HIS CLOTHES
BEFORE GOING TO BED
PREPARED BY THE OFFICE OF THE PUBLIC WELFARE COMMISSIONER FOR THE BUREAU OF EDUCATION
Manila, P.I.
School Series No. 4
A GOOD SCHOOL CHILD
PRACTICES WHAT HE LEARNS IN SCHOOL
HELPS TO KEEP HIS HOUSE
AND NEIGHBORHOOD CLEAN
TAKES ACTIVE PART IN CLEAN-UP-WEEK
PREPARED BY THE OFFICE OF THE PUBLIC WELFARE COMMISSIONER FOR THE BUREAU OF EDUCATION
Manila, P.I.
School Series No. 5

HEALTH WORK IN THE PHILIPPINES

From the office of the Public Welfare Commissioner for the Bureau of Education of the Philippine Islands come the posters on this and the opposite page to show us what methods are being used in the Islands to spread the gospel of good health. Perhaps "Better Babies" sounds more attractive to us than "puericulture," but as long as better babies are being produced we needn't worry about the terms. The campaign for hygienic conditions and education of the people in the Philippines has had much more striking results than in this country, because the need of the work has been so much greater.

Pacific and Atlantic

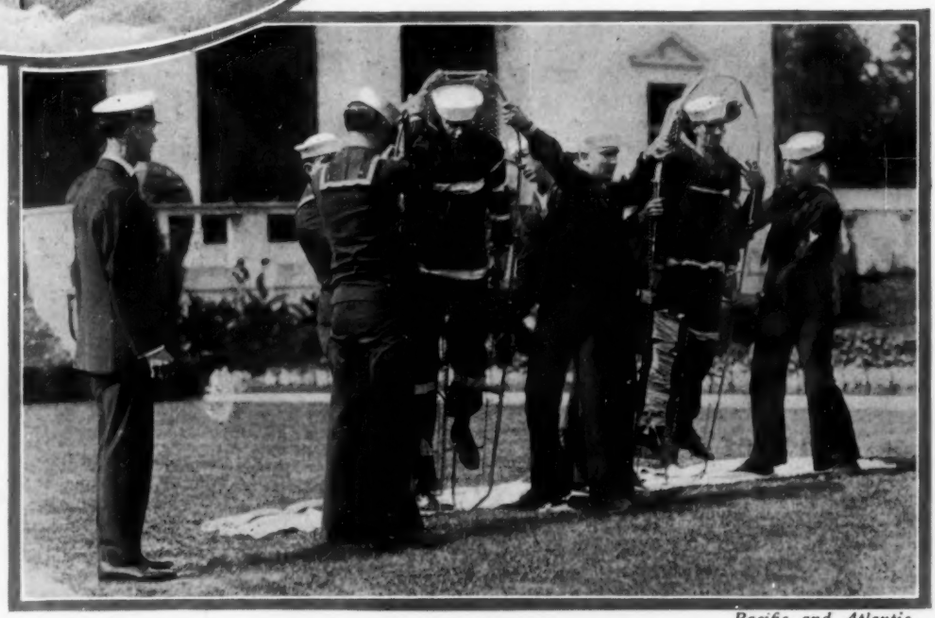
FIRST AID IN FIRE

The fireman to the right is demonstrating how to carry two persons at one time from a burning building. The methods of rescue taught every member of the navy and army and police and fire departments throughout the country might well be learned by the public as well.

Keystone

HEAT TO TREAT DISEASE

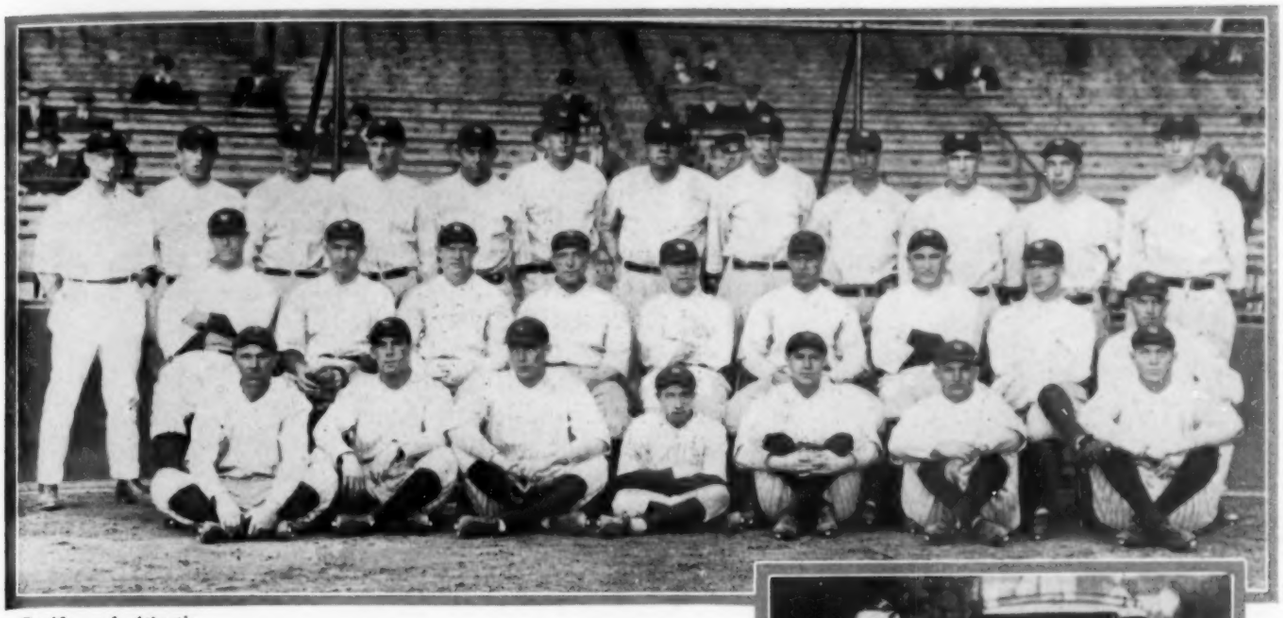
Heat rays are being used in the treatment of chronic and acute infectious diseases and the after-effects of such diseases. Many hospitals have apparatus for "baking" limbs that are paralyzed or crippled as the result of disease. In every city there are some institutions where such treatment is given free to the deserving poor.



Pacific and Atlantic

FIRST AID FOR THE NAVY

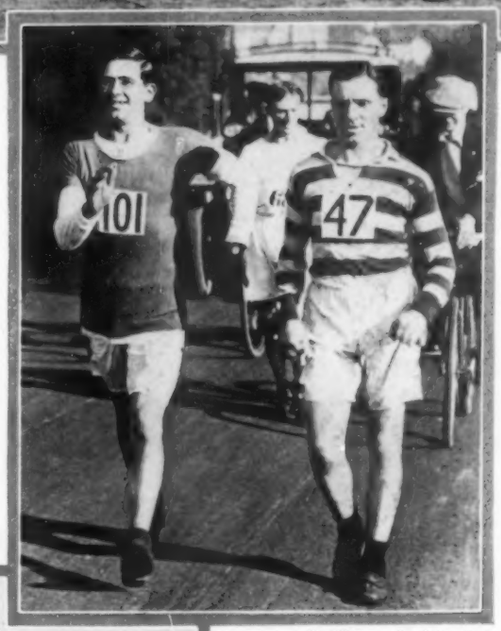
The navy men demonstrate how they can care for their sick and wounded comrades. The basket stretchers into which the men are strapped are adjustable, according to the location and nature of the injury. The patient can be kept upright, or, if he is more comfortable lying on his back, the stretcher can be laid flat. One of their great advantages for transportation is their lightness.



Pacific and Atlantic

WINNERS OF THE PENNANT

Every young American is interested in the winners of the pennant in the American League, the New York Yankees. The professional baseball player has a playing life of only a few years. The average player is seldom in the major leagues for more than from five to ten years. It is a demonstration of the wear and tear of professional athletic life. For the average man, a certain amount of exercise taken under reasonable conditions prolongs life; professional athletics, however, may have the opposite effect.



Pacific and Atlantic

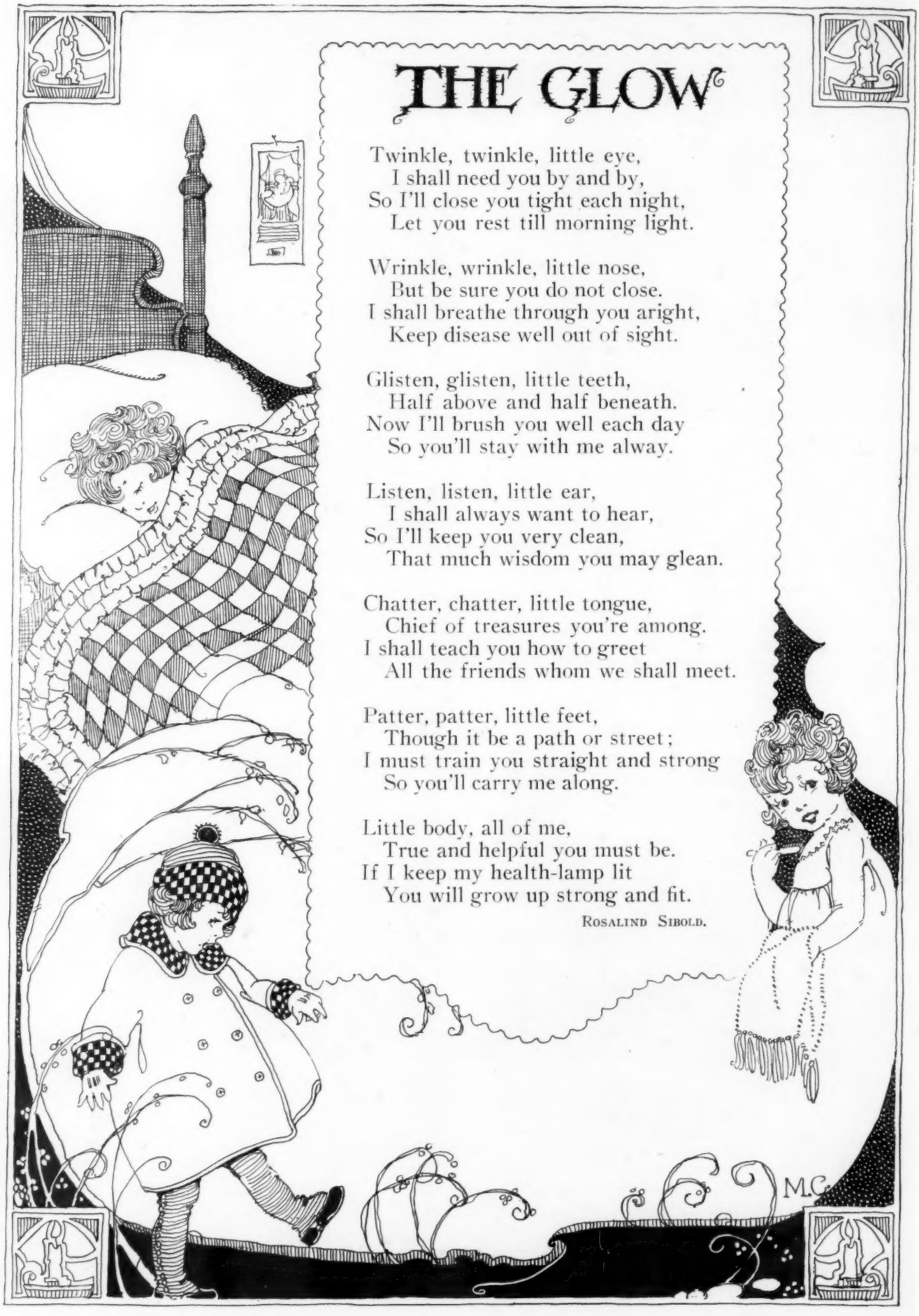
WALKING TO A WIN

Each year the celebrated walkers of England hold a contest, walking from London to Brighton, a distance of 60 miles. Walking is one form of athletic activity that is open to every man. It is not, however, as many believe, a form of exercise for mollycoddles. Brisk walking, as can be seen from the appearance of the man on the left, calls for activity of all the body muscles and it keeps you out in the open air.

Pacific and Atlantic

THE COACHES OF YALE

With the opening of the football season, attention is drawn once more to the highly technical system of coaching that has been developed for this sport. Football, more than any other sport, cultivates grit and determination; the football teams of Yale have for years been known for this feature of play. In fact, the bul! dog has been the symbol of Yale football.



THE GLOW

Twinkle, twinkle, little eye,
I shall need you by and by,
So I'll close you tight each night,
Let you rest till morning light.

Wrinkle, wrinkle, little nose,
But be sure you do not close.
I shall breathe through you aright,
Keep disease well out of sight.

Glisten, glisten, little teeth,
Half above and half beneath.
Now I'll brush you well each day
So you'll stay with me alway.

Listen, listen, little ear,
I shall always want to hear,
So I'll keep you very clean,
That much wisdom you may glean.

Chatter, chatter, little tongue,
Chief of treasures you're among.
I shall teach you how to greet
All the friends whom we shall meet.

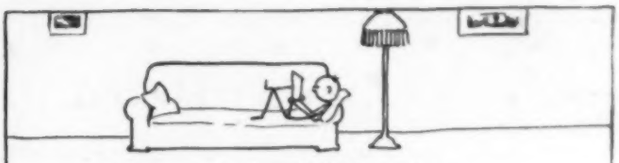
Patter, patter, little feet,
Though it be a path or street;
I must train you straight and strong
So you'll carry me along.

Little body, all of me,
True and helpful you must be.
If I keep my health-lamp lit
You will grow up strong and fit.

ROSALIND SIBOLD.

I used to be a sissy-cat!
The fellows called me names,
I stayed at home and couldn't join
Their rough and tumble games.

1



I felt so tired and listless that
I didn't care to play,
And sat about the house and read
To pass the time away.

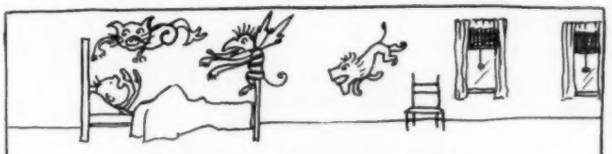
2

I was so thin and scrawny that
The neighbors said, "Oh dear,
He'll not be with us very long,
He looks so pale and queer!"

3

My mother fed me candy, cake,
And coffee, tea, and pie,
And doughnuts, too, and everything
That she knew how to fry.

4

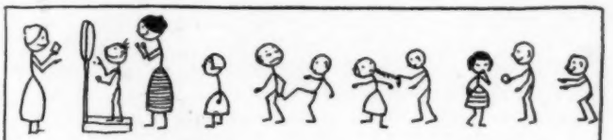


I stayed up late, and then I slept
With windows shut up tight.
And wow! the awful dreams I had
Each terrifying night.

5

My throat was sore, my tummy hurt,
My teeth were aching, too,
I could not breathe; I was a wreck,—
And what was I to do?

6



I joined my school's nutrition class
A remedy to seek.
'Twas fun to play the game, and soon
I gained a pound a week.

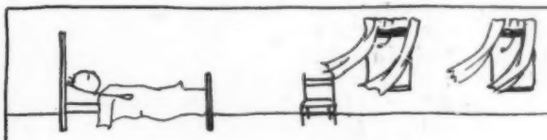
7

I had my tonsils taken out,
And adenoids—it wasn't bad,
And had my teeth all tinkered up,—
I tell you I am glad.

8

I eat a lot of wholesome food,
No coffee now, or tea,
But milk and fruit and vegetables,
And no fried stuff for me!

9

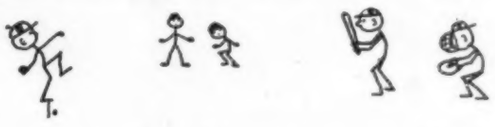


I go to sleep at eight o'clock
And sleep the whole night through,
With all the windows open wide,
As teacher tells us to.

10

I take two good long rests each day.
Say! You should see my chart.
The way my weight goes shooting up
Just warms my mother's heart.

11



I'm on the ball team now, and say!
I'm some good pitcher, too.
Here's my advice—if you're not fit:
Nutrition class for you!

12

EDITH INGERSOLL BULLEN.

BOOK REVIEWS

HEALTH HABITS, CHOOSING YOUR DOCTOR: By Z. Fuller, M.D. Cloth. Pp. 156. Texas. The Lodovic Press. 1922.

This book contains much common sense advice on food and health. Dr. Fuller explains that the habits advised are those which he has followed and which he has recommended to his patients. The book is not particularly inspired in language and not especially attractive in its make up. Its chief value is its elementary tone. Unfortunately, although patients are didactically told what to do, the book lacks explanations of the reasons why certain things should be done. Some of the discussions, particularly those on vitamines and on diet for the aged, are hopelessly inadequate. There are so many better books of this character that one wonders why the author did not choose to avail himself of them rather than prepare this book for his patients.

A MANUAL OF ARTIFICIAL RESPIRATION: By Captain G. R. G. Fisher. Cloth. Pp. 79. Illustrations 12. Boston. The Stratford Company. 1923.

Official mortality statistics show that almost 10,000 lives are accidentally lost annually in the United States by arrest of breathing. About 6,000 are due to drowning, 3,000 to asphyxiation, and 1,000 to electrocution. There are in addition to these about 4,000 cases of suicide by similar means. "If only the knowledge of artificial respiration were more generally known, especially among workers in the industrial world, thousands of persons who have been buried might be alive today."

Convinced that the Schäfer method of artificial respiration is simple and can be taught clearly to persons in the industries, Captain Fisher has written this little book in the hope that its widespread use will lead to general knowledge of the Schäfer method. Immediate action by fellow employees or others who may be present when such accidents occur would aid in stemming the tide of lost lives.

The emergencies that demand immediate treatment by artificial respiration are drowning, asphyxiation by various gases, by fumes or fumigating agents, severe electric shocks, cave-in accidents, poisons, sunstroke, freezing, hanging, garroting or choking from food, knockout blows, and "winding" from exhaustion, as after a grilling race.

The instructions are conveyed by reproductions of photographs posed for the purpose, with explanatory text describing briefly but adequately the several steps to be followed in the Schäfer method of artificial respiration. There is also a description of the Sylvester method. A few general rules are given, emphasizing the importance of calling individual aid at once, applying external heat, the use of ammonia, and the need of fresh air.

A chapter on "Don'ts" follows. The pulmotor is not to be relied on because it is rarely at hand, often out of order, and dangerous in unskilled hands. Specific instructions are given for dealing with cases of electric shock, drowning, asphyxiation by gas, gasoline, ammonia, and smoke or acid fumes. Finally the methods of carrying a patient from a place of danger to one of safety are described and made clear by pictures that really illustrate. There are the assist, the coat carry, hip carry, fireman's lift, and back crawl carry, each of which has advantages under certain conditions. An adequate index makes reference to the several topics easy.

A PARODY SPORT BOOK: By Happy (Cliff Goldsmith). Cardboard. Pp. 18. New York. American Child Health Association. 1923.

This booklet is one of the first publications for the older boy issued by the American Child Health Association. It appeals particularly to the lad from ten to twenty years, and it will be scanned with interest by every boy into whose hands it may fall. It is a symposium in the names of the champions of the year in every sport, and every one of them urges a clean, sane life. It is illustrated with excellent photographs of the champions in action and with well conceived cartoons. Examples of some of the aphorisms follow:

The daily swim in even a short tub will eventually take you a long way.

When you root for running water, you're on the right track.

EVENING BASEBALL

The Game that Made the White Pajama Twirlers Famous over Night

NOW TO HIT A HOME RUN

First Inning—Avoid an overabundance of BATS.

Second Inning—STEAL HOME as early as it is gracefully possible. If it is disgracefully impossible, we suggest sliding.

Third Inning—By this time it should be clear that you are not to be caught OUT after 8:00 p. m. more than one night every seven games.

Fourth Inning—Which reminds us, every hit made at 8:00 p. m. or before counts as a home run. Every hit made after the twice above mentioned hour, namely, 8:00 p. m., counts as a foul; any made after 10:00 p. m. is a foul foul, and any made after that will knock your batting average right in the eyes. (Please excuse the slang.)

Fifth Inning—Your pillow is third base. A clever and wide-awake player sleeps on this sack often during an entire game.

Sixth Inning—An open window usually results in a spectacular catch. Respect the umpire, however, and keep your mouth shut.

Seventh Inning—This is lucky seven. Play safe and pull the covers up a bit. Get near the window where you can keep your closed eyes on the moon which is covering center field. In case any stars try to slide, turn over.

Eighth Inning—By this time you should be rooting for the home team and driving out three-baggers every time the ball is pitched.

Ninth Inning—6:00 a. m. Game called on account of light. Good game, eh?

THE SCIENCE OF FEEDING BABIES: By H. Elizabeth Gould. With an introduction by Heinrich Stern, M.D., LLD. Cloth. Pp. 155. New York. The Rebman Company. 1916.

This book was copyrighted in 1916, and is apparently being reissued at this time because of the demand for books of information on the care of babies. The author is not a physician and apparently her training as a nurse caused her to believe that she knew much more than do physicians about such matters. She constantly airs her disagreements with various authorities. The book contains much wrong advice and misinformation. It is mentioned here only to condemn it for its errors.

QUESTIONS AND ANSWERS

If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a two-cent stamp. If the question is of general interest, the answer will be published; otherwise it will be sent by mail. The names of correspondents will not be published. Diagnoses in individual cases will not be attempted nor treatment prescribed.

Cause and Cure of Asthma

To the Editor:—Please give me some information on the subject of asthma. Is it curable? What are some of the causes? What are the best cigarets to smoke for asthma? D. N. F., Iowa.

Answer.—A large percentage of patients suffering from bronchial asthma can be cured, provided the substance responsible for the attacks can be definitely established. This substance is usually protein, of animal or vegetable origin, and often can be determined by skin tests. The most frequent causes are foods, animal dander or hair, pollen, and bacteria.

Cigarets for the relief of asthma usually contain leaves of stramonium, grindelia, and similar plants; the alkaloids, chemical substances of these plants, are supposed to prevent the spasmodic action that is associated with asthma. Some of the cigarets sometimes temporarily relieve the paroxysms.

El Zair

To the Editor:—Will you kindly tell us about "El Zair," a descriptive circular of which I am enclosing? What is its active principle, and how can it affect the system through the skin?

A. D. K., North Dakota.

Answer.—"El Zair" does not "affect the system." It merely affects the pocketbook. The thing is an utter and preposterous fake. A brief editorial paragraph deals with the nostrum on page 522 of this issue. A reprint of the entire article, as it appeared in *The Journal of the American Medical Association,* will be sent on receipt of a request, accompanied by a stamped, addressed envelope.

Development of Breasts During Pregnancy

To the Editor:—Is there some harmless method of enlarging the busts? I am planning to marry and it is my greatest wish to be a mother. I am as flat chested as a boy. I fear I could not nurse my baby if I had one. Can you help me? I wear no corsets and am quite well. I would not resort to fakes and patent medicines.

K. L., North Carolina.

Answer.—One of the first effects of pregnancy is a stimulation of the secreting tissue of the breasts in preparation for the function they must undertake. The size of the virgin breast is no indication of its functional capacity. Many small breasts develop a greater capacity than large pendulous breasts, which may contain even less glandular tissue. Proper hygiene, air, exercise, and diet are necessary adjuncts. We know of no mechanical method that would be of assistance.

Inverted and flat nipples may often be improved by drawing them out by the use of gentle traction or pressure night and morning. A good breast pump is often used to advantage for this purpose.

As the breasts develop during pregnancy some form of supporter should be worn.

Hookworms by Way of Chickens

To the Editor:—Among other valuable articles in your magazine I have been much interested in the series by Dr. Chandler on animal parasites. After reading the article in HYGEIA for August, I am anxious to learn whether the domestic fowl acts as an intermediate host to human parasites. Nothing seems to be said about it in Dr. Chandler's articles, yet chickens certainly do eat human excreta and have vastly more opportunity to do so than pigs. Furthermore, fried chicken is often served incompletely cooked.

E. E. W., Kentucky.

Answer.—There are no human parasites other than bacteria which develop in the flesh of chickens or other birds, and such flesh, even if incompletely cooked, is therefore not dangerous from this standpoint. Some evidence has been obtained recently to show that chickens may act as disseminators of hookworm eggs, since a small percentage of the eggs go through the digestive tracts of the fowls uninjured. Hookworm eggs subsequently hatch in the droppings of the birds and may cause infection in the usual manner, the larvae burrowing through the skin. It is probable, however, that the destruction of a large proportion of the hookworm eggs in the fowl's gizzard more than counterbalances the undesirable effect of scattering the few eggs that escape uninjured.

Hemorrhoids

To the Editor:—Will you please write me the symptoms of piles? Are they dangerous; can they be cured? I am thirty years old, and considered in good health. J. G. F., Iowa.

Answer.—Piles, hemorrhoids, are dilations of the veins about the lower rectum and anus. Symptoms at times are itching, intermittent bleeding, and, sometimes, protrusion of the hemorrhoids outside the anus. Hemorrhoids sometimes develop after some disease of the abdomen, such as disturbances in the liver or a growth in the rectum. Many types of hemorrhoids are cured by surgical treatment.

Epilepsy—Cause and Treatment

To the Editor:—Are epileptic fits caused by a fault in the digestion of certain important foods, as Gerolamo Cuneo asserts? If so, what foods? My observation is that fresh pork, bananas, hot biscuits or pastry, oysters, or merely an overloaded stomach will cause an attack. It seems also that a too full bladder causes an attack, since urine is frequently voided during an attack, and many attacks occur just as the patient is going to the toilet. Worry and excitement also appear to lead to attacks. Will you give me some accurate information regarding the cause and treatment of epilepsy? Anything you may suggest will be greatly appreciated. H. A. W., Ohio.

Answer.—Epilepsy is not a single disease, but is a symptom resulting from one or more of many causes. Among the causes that are known are certain poisons or the effects they produce in the body, excellent examples of which are alcohol and the poisons that result from diseases of the liver and kidneys. The fault that was studied by Cuneo with striking and suggestive results concerns the digestion of carbohydrates, especially the starches. No one has yet confirmed his conclusions, however, and, while he may be correct for some cases of epileptic fits, the dietary studies of other investigators seem to estab-

lish that carbohydrate digestion is not a prime factor in causing the fits in many cases. For years it has been taught that faulty digestion of proteins in the diet may be a cause, and most physicians recommend that the amount of proteins, especially meats, in the dietary of epilepsy of unknown cause be limited. Within recent times, also, considerable publicity has been given to the claim that complete starvation for three or four weeks will cure epilepsy. It is a fact that prolonged starvation is frequently accompanied by cessation of epileptic fits but, unfortunately, the relief is usually only temporary. In some cases an error in diagnosis may have been made, the fits not being true epilepsy; hence the claim of cure. In true epilepsy the convulsions reappear when the patient resumes eating and a more active life. As the result of a prolonged study of a number of cases in a village for epileptics during which starvation and diets rich in protein, carbohydrate, or fat were maintained for several weeks, it has recently been reported that in so-called essential epilepsy (epilepsy in which the cause is unknown) no demonstrable relation of the fits to any one of these factors could be found.

Indiscretions in diet and worry or excitement may excite fits. All upsets and extra strains on the body, as well as local irritations, such as infected teeth or tonsils, may bring on fits in epileptic persons. The first requisite in the way of treatment is an accurate diagnosis, which means study of the functioning of the various body systems to eliminate any of the known causes. If a removable cause cannot be found, the treatment must consist of careful regulation of the mode of life so as to avoid strains that the patient is unable to meet without risk, just as would be done in a case of heart disease or other bodily handicap. In addition, drugs can be administered with advantage to keep the fits in check, at least in many cases. But it is essential to realize that the particular variety and quantity of such drugs must be selected to suit the particular case. There is no single remedy or dosage that can be administered as a routine without serious danger of causing more damage than would be caused by the fits if they were left unchecked.

Pierce's Anuric Tablets

To the Editor:—Can you tell me anything about Dr. Pierce's Anuric Tablets, which Dr. Pierce claims cure any kidney trouble? Has this concern ever been written up? E. H., Minnesota.

Answer.—"Pierce's Anuric Tablets" were dealt with at some length in *The Journal of the American Medical Association* for September 15, 1917. The matter is reprinted in full in a pamphlet, "Nostrums for Kidney Diseases and Diabetes" (price 15 cents). Anuric Tablets never cured a case of kidney disease. The advertising of nostrums for self-administration in the treatment of so serious a condition as diseases of the kidney is fundamentally and essentially vicious.

Hydrotherapy for Nervous Trouble

To the Editor:—Will you kindly let me know the effect and value, if any, of hydrotherapeutics in the treatment of nervous trouble, especially nervous fatigue? I appreciate very much receiving HYGEIA as I have been for the past few months. G. A. L., Pennsylvania.

Answer.—Hydrotherapy is an extremely valuable method of treatment in many types of nervous trouble. But, as with most other remedies, it must be prescribed to meet the needs in each particular case. Nervous fatigue is an extremely vague and indefinite term that often serves to cover ignorance of the true nature of the trouble. Hydrotherapy can be used to produce calm and rest, and is probably the most valuable remedy we have for this purpose. When used with this object in view, prolonged tepid baths or packs in quiet surroundings are indicated. On the other hand, hydrotherapy will also cause stimulation, either general or local, in some one part of the body, by altering the circulation, causing contractions of muscles, and increasing the combustion that is going on in the body. For this purpose the water is used cold, the temperature being gradually altered to conform with the ability of the patient to react, or alternately cold and warm, and is combined with friction and exposure to fresh air. Nervous fatigue may need either sedative or stimulating treatment; it is important that this is properly determined, since hydrotherapy improperly applied may do harm.

Care of the First Teeth

To the Editor:—Isn't it just as important to keep the first teeth of children clean and free of a peculiar looking green substance that collects on their teeth as it is to keep their second teeth clean? I know a woman who neglects her children's teeth—they are boys of three and five years—but says she will take good care of the second set. M. B., Texas.

Answer.—Care of the first teeth is even of more importance than of the second, or permanent, teeth, since, unless they are cared for, they decay and become infected. Many children have lowered vitality from infections due to neglected teeth. If any of the first teeth are prematurely lost, moreover, the jaws do not develop properly and the second are irregularly placed in the jaws, and are therefore more subject to decay and pyorrhea.

Congenital Dislocation of the Hips

To the Editor:—Should a person who has been born with dislocation of the hips marry and expect to have children? The person to whom I refer is very active, being able to swim, dance, play golf, and so forth, but is rather stiff in the hips and is quite "sway-backed" on account of this stiffness. D. S., Ohio.

Answer.—Congenital dislocation of the hips, especially of one hip, does not interfere materially with childbirth. Undoubtedly the tilting forward of the pelvis that accompanies a double dislocation might complicate delivery considerably, depending on the age of the mother. Many of the persons with congenital dislocation of the hips are born of mothers who have a similar deformity.

Climate and Tuberculosis

To the Editor:—I wish to know whether a person with tuberculosis going to New Mexico and getting cured could come back here to live without bad effects. Would you advise a patient with a case not very far advanced to go there if he had ample means to do so? J. T., Iowa.

Answer.—Apparently this question could be answered yes or no, but it is not quite so simple as it appears on first reading, for it includes the question of whether a person affected with tuberculosis should go to New Mexico. This depends on a number of factors, financial, physical, and mental. The financial situation depends entirely on whether or not the patient is able to live that distance from home without pecuniary assistance. The physical consideration relates to whether or not the patient's physician would advise the change of climate. There may be physical factors that would make it unwise for the patient to

be moved. There is also the question of whether or not the patient would receive the proper care for his particular case in New Mexico. The mental side of the question depends on whether or not the patient would be content living away from family and friends for a comparatively long time and whether the patient could live in the midst of the dull brown characteristics of our southwest with its absence of shade without becoming mentally depressed. To some persons these surroundings have a peculiar charm; to others they are dispiriting.

In regard to the definite question whether a person who has lived in New Mexico and has been cured of tuberculosis could return to Iowa to live without bad effects—if the patient is cured, there is no doubt but that he could live in any climate. However, the term generally applied to a so-called cure is "arrested"; it is known that a large number of persons in whom the disease has been arrested suffer from relapses unless they live under proper hygienic conditions and under the direction of a competent physician. If one considers climate alone, the question could be answered definitely "yes," but the after-care and the mode of life of a patient with arrested tuberculosis needs to be supervised in considerable detail by a competent physician, and this is far more important than the climate in which the patient lives.

Dr. E. R. Baldwin of Saranac Lake spoke in Congress at the hearing before the Committee on Public Buildings and Grounds on the subject of additional hospital facilities for discharged tuberculous veterans. He answered the question, "These patients should be in the west and southwest, should they not?" as follows:

"My personal opinion about that would be influenced a good deal by the number of men near the location of the hospital, or the nearness of their homes. I believe as a general policy the treatment of tuberculosis on a large scale in this country or in any other country, particularly with men who have families, that it should be possible to treat them more successfully, much more successfully, within a reasonable distance of their homes.

"In the first place, I think that there is an exaggeration in regard to the climatic treatment that has been traditional in the medical profession, and in the lay mind. Good results can be obtained, I think equal results, in a great many different climates, whether sunshiny, or dark, or cold, or wet, or hot. As a rule the patient is better satisfied in the long run if he is near his family and has attractive surroundings with good food and diversion of some kind."

Scholl Company Remedies

To the Editor:—We find that women are using the devices and remedies put out by the Dr. Scholl Company. The concern sends lecturers and moving-picture films to further proper care of the feet, this care always to include the use of one or another of the devices on sale. Is Scholl a physician? Please tell me whether the methods are scientific and whether his lectures have educational value. T. N., North Carolina.

Answer.—Although some of the Scholl advertising states either directly or inferentially that William M. Scholl is a physician, our records—and they are the most complete extant—based on official data, fail to show that Mr. Scholl was ever graduated by a reputable medical college or was ever licensed to practice medicine in any state in the Union. The Scholl concern is essentially in the business of selling devices, powders, and so forth, for the alleged cure or relief of certain foot ailments. That some of these may have value in selected cases is probably true; it would be strange, indeed, if they didn't. That they will do all the things that are claimed for them is just as certainly not true. Whether the Scholl "lectures" have any educational value, we cannot say. That they have commercial value—to the Scholl concern—may be admitted.

One Kidney Compatible With Health

To the Editor:—What are the chances of living a healthy life after a kidney has been removed? J. A., Illinois.

Answer.—The chances are good, providing the remaining kidney is normal and the removed kidney was not the seat of malignant disease. With the present-day methods of diagnosis we are able to determine quite definitely not only the presence of disease, but also how much work each kidney is doing. If the trouble is limited to one kidney and the function of the opposite kidney is normal, the chances for health after removal are good. Naturally the person who has lost one kidney should be more careful as to habits of living and working than one who has both kidneys.

Superfluous Hair

To the Editor:—(1) What is the best remedy for superfluous hair? (2) Please tell me which is the best depilatory on the market for lasting results. (3) I have seen "Kilrute" advertised to control the glands that control the growth of hair; but would this not affect the hair on the head also? D. M. L., Mississippi.

Answer.—The question of superfluous hair and the so-called depilatories was discussed on pages 196 and 197 of the June issue of HYGEIA, and on page 403 of the September issue.

We do not have any knowledge of "Kilrute."

Detoxyl and E. R. Moras

To the Editor:—Some of our friends advise us to use a preparation called Detoxyl, put up by a Dr. Moras, to break colds and fever, including influenza. Dr. Moras claims that his tablets are merely concentrated fruit juice and a sure cure for influenza. He also recommends them in his treatment for high and for low blood pressure as outlined in his book "Autology." He advertises as a graduate of Johns Hopkins. Can you tell me what are the ingredients of these tablets and what is Dr. Moras' professional standing? C. R., California.

Answer.—An analysis of "Detoxyl" is given in the book "1001 Tests" by Dr. Harvey W. Wiley, former Chief of the Bureau of Chemistry at Washington. Dr. Wiley describes Detoxyl as "a tablet consisting essentially of Epsom salt with citric and tartaric acids in combination with soda. Said to cure practically all known diseases from pneumonia to whooping cough, including typhoid fever and delirium tremens, when used in connection with the dietetic and hygienic system outlined in the literature. The claims are obviously impossible of fulfilment."

From such data as we have in our files, E. R. Moras seems to be erratic and unbalanced and to have been in a number of difficulties. He is the author of a health fad book, and has exploited several "patent medicines." One of the latter was sold under the claim that it would "repair, rejuvenate and reshape the eye and sight." The government chemists analyzed this and found it to be nothing more than perfumed vaseline, and its manufacturer was prosecuted under the Food and Drugs Act. After the prosecution, the name of the stuff was changed. Since petrolatum, even when perfumed, will not repair, reshape, or rejuvenate the eye or the sight, the product was declared misbranded. Later its name was changed.

HEALTH REVIEWS

HEALTH IN THE CURRENT MAGAZINES

WORLD'S WORK

In *World's Work* for October, "Closing in on Yellow Fever" is discussed. While the disarmament of this foe of mankind is perhaps not yet in sight, the fact that yellow fever has disappeared from the West Indies and Central America is almost as great a miracle as would be the abolition of war in other places. Now the disease exists in only three places. A few cases were reported last year in Mexico, Brazil, and in Africa. This reduction is one of the greatest achievements of human kind. It is almost exclusively American, and is perhaps America's greatest contribution to practical science. The story of the discovery of the insect transmission of yellow fever is told briefly, and the prediction made that the complete victory is probably a question of only a few years. In contrast to this happy picture is the wide prevalence of malaria. Yellow fever epidemics in the past have been so terrible and sudden in their onset that they have seemed more dreadful than any other disease. Yet, even yellow fever is not so dangerous in the United States as is malaria. Malaria does not confer immunity on its victims, and therefore continues its ravages over a long period of time. How serious a thing malaria may be is shown by examination of the employees of the Missouri Pacific Railroad by the United States Public Health Service. Ninety-five per cent. of its hospital admissions, and 45 per cent. of all its cases were chargeable to this infection —and these statistics give only a part of the story, for malaria is preeminently a "walking" disease; thousands have it who never get to a hospital. One of the tasks of railroads, especially in the southern states, is that of cooperating with the government in the warfare on this most enervating of all diseases.

In the series of articles by men of prominence on "What I Am Trying to Do" Walter Camp, so long engaged in physical education, discusses the three things which he says "are of overwhelming interest to me:" (1) to induce people to take proper and systematic exercise and thus gain and keep good health; (2) to presuade colleges to modify the extravagances of their Frankinstein method of athletics, and (3) to demobolize the expensive side of golf and other athletic sports.

WOMAN'S HOME COMPANION

In the *Woman's Home Companion* for October, the Soul and Body Clinic, conducted at the St. Marks Church in New York City, is described in some detail by Dr. Edward Spencer Cowles. While there is considerable difference of opinion as to how much purely mental states affect physical conditions and the extent to which they can be cured by mental healing methods, the likelihood of good results is certainly much increased when the physician and the minister work together. Accounts are given of how the victims of various obsessions have been relieved of their symptoms. The advice is summarized as follows:

"Protect your physical health by establishing regular habits, including the habit of being well. Take your bodily welfare more or less for granted. Don't be self-conscious about it. Don't be prying and poking into your consciousness in the effort to find out whether anything is wrong. Self-analysis has done a great deal of harm, especially to sensitive women. Don't, in short, look for trouble. And if you have a pain, don't practice self-diagnosis. If you are anxious, go to a competent physician for examination."

Under the title "Around the Clock," Dr. W. R. P. Emerson writes of the normal child's daily routine. The article is illustrated by a clock dial on which are pictured the various activities of the twenty-four hours. The day's program may be well compared to the four forces that safeguard the child's health: the health of the home, the health of the school, medical care, and the child's other interests. Eleven hours for sleep for a boy or girl of ten or twelve is important; also the meal times, which should always be punctual. The child should remain at the table not less than twenty minutes so that he may learn proper habits of eating. The underweight child needs twice as much food as the child of normal weight, and more frequent meals are advised in the form of midmorning and midafternoon lunches. Dr. Emerson warns against undue fatigue, and at the same time advises that the underweight child should have a reasonable amount of play at the proper time. Suggestion is useful, especially to the underweight child. Encouragement goes further with him than does a negative method. The keynote of this talk on "Around the Clock" is the regularity of habit, one of the most potent factors in establishing health.

THE DELINEATOR

In the *Delineator* for October, "Keeping Fit at Home" is discussed by Mr. Fielding H. Yost, director of athletics and physical education at the University of Michigan. The article is illustrated with drawings that indicate very clearly the exercises described. Exercises for women may be divided into three general classes: Competitive games, class games and callisthenics, and individual exercises. Mr. Yost recommends a combination of all three types of exercise, when possible. The first two types have distinct advantages, and a woman can keep fit without the use of a gymnasium, instructor, or apparatus. The advantages of the several types of games are discussed, and advice given as to the qualities of self-control, self-denial, and the like, which they aim to develop.

"The Happy Child" is discussed by Dr. Harvey J. Burkhart, director of the Rochester Dental Dispensary. Reliable investigation discloses the fact that 80 per cent. of children under five years of age are in need of medical or dental attention, or both, largely because of decayed or abscessed teeth. Much of the pain and suffering of children may be avoided by proper attention to the diet and the observance of simple rules for the care of the mouth and teeth. Education of the expectant mother will be found of the greatest aid in the prevention of dental decay. Teeth of breast fed children are much better and less liable to decay than those of bottle fed babies. The care of the mouth of a very young child, before the eruption of the first baby teeth, is important. The proper method of brushing the teeth is described. It is noted that the care of the mouth and teeth when the child is ill is of special importance. Defects in the first set of teeth should be corrected promptly; that is, they should be filled with some material that will correct the decay. This not only prevents pain, but also helps preserve the first set of teeth, and their preservation is important for the proper development of the permanent teeth. The importance of the good condition of the teeth in reference to thorough mastication is manifested. The use of sugar and sweets in a

considerable degree is discouraged. "If you would have your child's permanent teeth sound and strong, give him a clean mouth, plenty of fresh air, and nutritious food."

In "Kidneys and Livers Have Vitamins," by Lucille Brewer and Alice Blinn, are given a number of recipes for the preparation of these meats.

VACCINATION FOR SMALLPOX IN JAPAN

Vaccination for smallpox was introduced into Japan in 1820 by Siebold, a Dutch scientist, who brought the vaccine from Java to Nagasaki. The people refused to give it a trial at that time. Twenty years later another attempt was made to introduce it, but it was not a success, because the vaccine imported from long distances over seas lost its potency. Finally, some time between 1845 and 1850, it was introduced again and many persons were vaccinated successfully. It was at this time that the picture here reproduced was published and distributed by a vaccinator in Yeddo. In 1860, vaccination was brought under government control. In 1875, regulations were passed making compulsory the vaccination of all newborn babies, and their revaccination between five and seven years of age. In 1896, the central government undertook the manufacture of vaccine. How efficient vaccination has been in Japan is evidenced by the words of Professor Miyajima:

"The widespread employment of vaccination in Japan has brought about a great diminution in the prevalence and severity of smallpox. History tells us that during ten centuries prior to the introduction of vaccination there were sixty-five great epidemics of smallpox and that five emperors died from it. There have been epidemics since vaccination was begun, particularly between 1886 and 1891, and in 1896 and 1897, but they have been less frequent and less severe; and it has been possible, especially in recent years, to bring them quickly under control by measures for compulsory vaccination. This was exemplified in 1907, when the importation of smallpox into Kobe seemed likely to lead to an epidemic comparable in severity with the epidemics of prevaccination days. I must add, however, that despite the existence for many years of a compulsory vaccination law in Japan, the people in general are still very neglectful of the measure, and it is easy to find among the poorer classes many unvaccinated children. For this reason, as well as because Japan is situated near countries where smallpox epidemics are frequent, it is highly important for us to enforce the law relating to compulsory vaccination as strictly as possible."

POSTER USED IN VACCINATION CAMPAIGN IN JAPAN

Translation of the first poem on the right: *Who ever called him the "God" of smallpox—*
The incarnation of a demon accused?

Translation of the second poem on the left: *Blessed be (the vaccine) that relieves the parent from anxiety and brings to the happy babe the fruit of long life.*

The writing in the picture is an account of the introduction of vaccine from Holland into Japan. It advises every parent who has a child to ignore his superstition and accept the treatment which will bring happiness to the family. The picture represents a child being tormented by the demon of smallpox. A healthy vaccinated child is riding to his rescue on the cow which gave the vaccine.

CURRENT COMMENT

Reading any one of the eight biographies of Henry Ford, one discovers that he makes those cars deliberately.

---

*The most popular song of the day is "Y-s, ** **** ** *******." This is taken to be the actual proof that the mental age of the average American is what the psychologists say it is.*

Some people say that men are beginning to lose their faith, but the druggists continue to sell hair tonic.

Behold the football player! He goeth forth lightfooted, happy, and carefree. He returneth on a shutter as full of splints as a ten year old Ford. Ye rooters shout lustily "Give him ye ax." And he enjoyeth it. Verily man is strange, and full of contradictions.

SERIOUS INDEED

Hobbs: "I saw the doctor stop at your house yesterday; anything serious?"

Dobbs: "I'll say it was! He came to collect his bill."

TOO IMAGINATIVE

Magistrate: "And what was the prisoner doing?"

Policeman 784: "He was havin' a turrible argymint wid a cab driver, your honor."

Magistrate: "But that doesn't prove he was drunk."

Policeman 784: "No, your honor, but there worr no cab driver there."

Uncle Rastus—Is you goin' to hang up yoh stockin' nex' Christmas, Mose?

Mose—Ah don' know, Uncle Rastus, Ah done hung it up las' Christmas, but all Ah got wus a notice fum de Bo'hd of Health!

MEMBERS OF OUR CLUB

"You must take exercise," said the physician, "and by all means, worry less. Play golf."

"Doctor," said the patient, "you mean well, but the man who plays golf the way I do, can't help worrying."

Courtesy of Judge.

Doctor—Now, for heaven's sake, isolate the patient.

Mrs. Murphy—Whur'll I put th' ice, doc—on his stummick?

THE TRUE MILK DIET

If the world seems topsy-turvey,
And the kids have got the scurvy,
  And everything about is in a riot;
If the baby's looking mumpy—
What's the use of feeling grumpy?
  Just put them on the full milk diet.

If the scales show you are losing,
Don't indulge in fretful musing,—
  Take the milk cure for your nerves to quiet.
If your wife is acting tearful
And the servants far from cheerful,—
  Just put them on the full milk diet.

So no matter who is ailing,
'Tis a remedy unfailing,—
  No reputable medicos deny it.
If to old age you aspire,
There's just one thing you require:
  That's going on a full milk diet.

—*Lillian M. Benjamin.*

PICKING THE TREATMENT

Attendant (at sanatorium)—These patients want to know what kind of baths to take. What shall I tell them?

Director—What's this man's occupation?

Attendant—He's a speculator.

Director—Tell him to take a plunge.

Attendant—And this woman is a seamstress.

Director—Tell her to try a needle bath.

George Fitch on Doctors

"Doctors lead hard lives and only sleep now and then, owing to the great amount of sickness at night. They also have to trust in Providence for their pay. It is much easier to call a doctor thirteen miles into the country to subdue a mess of green corn that has insurged than it is to drive in and pay him a year later. Doctors do more free work than any other class, except amateur orators, and we should not begrudge them a liberal fee when they sink a shaft into our interiors and rearrange our works."

Are All the Members of Your Family Vaccinated?

Many good citizens allow their children and other members of their families to remain unvaccinated because they think there is no danger of a small-pox epidemic. This sense of security is false. An epidemic may break out in any community where there are many unprotected individuals. Have your doctor vaccinate your family.

IN the villages of Turkey, where there is no systematic vaccination, half the population is pockmarked. In a recent outbreak of smallpox in the Philippine Islands over 90 per cent of the deaths were of persons who had not been vaccinated. In Paris, when the European war broke out, and the possibility of smallpox invading the city was foreshadowed, 800,000 vaccinations were made, and as a consequence the city remained absolutely smallpox-free notwithstanding the shelter it gave to refugees from other sections.

There is no longer any danger connected with vaccination when the vaccine is prepared with all the safeguards known to medical science. This applies especially to the testing of the vaccine, its proper preservation, and the protection of even the needle with which the vaccination puncture or scarification is to be made. The vaccine should be reasonably fresh. Up-to-date druggists keep it in a refrigerator. Trust your doctor; he will make the right choice for you, and he will tell you, as we have done, that the one and only specific preventive of smallpox is vaccination.

PARKE, DAVIS & COMPANY

ASK YOUR DOCTOR TO PROTECT YOUR FAMILY

Dr. Deimel (Linen-Mesh) Underwear

IN their endeavor to protect themselves against exposure, people are apt to overburden themselves with underwear, especially in winter.

Twenty-eight years of extensive experience have proven that the Dr. Deimel Linen-Mesh Underwear is a most protective and comfort-table garment for any season and any climate. The advantages of wearing the Dr. Deimel Underwear in regard to health and comfort are such, that even a comparatively short trial will convince the most skeptical. It is the underwear of safety.

~

It is made for men, women and children.

~

DEIMEL LINEN-MESH CO.
San Francisco New York

OH! VERY WELL!

(Continued from page 540)

POEMS YOU MAY NOT KNOW

Poem by Alanson Skinner reprinted in Milwaukee Sentinel

SLAVES OF THE LAMP

Under the wild aurora, where shimmering ghost fires glow,
Where the sunbeams glitter at midnight on everlasting snow;
Where the muskox browse on the tundra; where the seal and the killer whale
Play hide and seek in the northern ice, and the frost fiends ride on the gale—
Country of cold eternal; home of the Eskimo;
It is there, if you seek, you will find us—far as a man can go!

Slaves of the Lamp of Science, forever and ever we roam,
With God's blue sky for a roof tree, and God's green earth for a home.
Astride of the hot equator, where the tropic jungles stream—
Where the molten wings of the butterflies slip by like a softened dream;
Where death lurks grim in the palm fronds; where fever basks in the flowers;
Where the jaguar prowls, and the hell mouthed snakes are close companions of ours.

Little brown savage headsmen—blowguns, poison and spears—
They hold no power to harm our kind, we who have lost our fears.
Slaves of the Lamp of Science, we carry no gun or knife,
For he need not heed the arrow's speed who has nothing to lose but his life.
Why do we travel, you ask me? Why do we journey far?
Go, beg the comets to tell you the why of the falling star;
Whistle the ranging coyote; speak to the startled deer—
And your answer from these will be but the breeze that blows in your empty ear.

Slaves of the Lamp of Science! And, oh, but our task is hard.
It has brought us nothing of riches, but foreheads wrinkled and scarred.
We are the earth's last gypsies—we are her roaming seed;
When her uttermost covert is ended, then falls the last of our breed.
But we live or we die for a purpose, and who can gainsay us then,
Who live for the joy of creating the understanding of men?

—◈—

ALL THINGS TO ALL MEN

A writer says chop suey is not what it used to be. He will now confer a favor by telling us what it used to be.—New York *Morning Telegraph.*

—◈—

IDENTIFICATION

After Mr. Smith had raked his yard he took the accumulated rubbish into the road to burn. Among the neighbor's children who came flocking round the bonfire was a little girl whom Mr. Smith did not remember having seen before. Wishing to make her feel at ease, he beamed upon her and said heartily, "Hello! Isn't this a new face?"

A deep red slowly submerged the little girl's freckles. "No," she stammered, "it isn't new. It's just been washed. That's all."—*Argonaut.*

—◈—

A MATTER OF REPUTATION

"How about this new drug that compels people to tell the absolute truth?" asked the laboratory expert.

"We'll turn out a supply," replied the manufacturers. "But be careful not to let the man who writes our patent medicine ads get hold of it."—*Washington Star.*

(Continued on page 10)

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The Science of Right Living

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Made from cereals only. Used with fresh cows' milk in Infant Feeding. Beneficial for Invalids, Convalescents, Aged and those suffering from Digestive Disturbances.
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"We are advertised by our loving friends"

Mellin's Food —A Milk Modifier

HUMAN milk is the best infants' food; therefore, the composition of human milk should be carefully studied before attempting to suggest a diet for babies deprived of their natural nourishment. This thought was the underlying principle that governed the making of Mellin's Food before its introduction and has continued to be the foundation of all claims for the efficacy of Mellin's Food and suggestions for its use as a part of the nourishment needed by infants who must depend upon some artificial means of sustenance.

Science has not yet shown a way to furnish a perfect substitute for human milk, but continued study of the physiology of digestion has made clear that, by adding certain nutritive elements to cow's milk, a food may be prepared upon which a baby will make satisfactory progress.

The result of any endeavor to alter the character or digestibility of cow's milk is usually referred to as "modified milk", and the material that is employed to make such changes is called "a modifier"; hence the term, "a milk modifier", which is correctly applied to Mellin's Food.

There are many different methods of modifying milk, and in most part they are based on theories consistent with accumulated knowledge on the subject. In actual use, some appear to be satisfactory in a limited number of cases, or perhaps are intended to meet special conditions only, while other methods achieve such marked success that they fill a permanent place in the field of infant feeding.

For many years Mellin's Food has been recognized as a successful modifier of cow's milk. This position is constantly strengthened by the ever-increasing employment of the Mellin's Food Method of Milk Modification, which is considered by competent authorities as a scientific and practical means of meeting the needs of the artificially-fed baby.

Mellin's Food Company, 177 State St., Boston, Mass.

THE FOOD-DRINK FOR ALL AGES

Endorsed by health authorities

The Original Malted Milk

(*Avoid imitations*)

A nutritious table drink,

especially for growing children and those who are subject to nervous, anaemic and digestive disorders.

Refreshes and invigorates

whenever tired or hungry. Drink "Horlick's" at home, office or fountain. Used by athletes and physical culturists.

For infants and in the sick room

Very reliable in the prescribed feeding of nursing mothers, and during illness.

Literature on its home uses and advantages, together with sample, prepaid on request

HORLICK'S

Racine, Wis.

OH! VERY WELL!

(Continued from page 8)

MEAN IS RIGHT!

The stingiest and meanest man has been discovered. The night before Christmas he told his little boy that Santa Claus was dead.—*Pickup.*

A HYGIENIC ANECDOTE

After eating a hearty meal at one of these scientifically planned restaurants, MacIntyre paid the cashier and strolled down the street. A pair of scales on the sidewalk attracted his attention. He stepped on them and dropped a penny in the slot.

"The dirty crooks!" he exclaimed, and dashed back to the restaurant.

"Look here!" he bawled at the manager. "You've cheated me. I'm short twenty-seven calories."

The managed gazed at him coldly.

"We can do nothing for you," he observed. "You should have noted that sign."

MacIntyre looked at the wall and read:

"Count Your Calories Before Leaving the Restaurant."—*American Legion Weekly.*

THEN THE FUN BEGAN

A stout, determined-looking man reached the station just as the train was pulling out. He ran down the platform, seized the handrail of a coach and was about to hop aboard when some one clutched him by the coat tails. It was a brakeman, very angry and blustering.

"There, I've saved your life," the brakeman said. "Don't every try to hop a train when she's in motion!"

Then as the train continued to gather speed the brakeman skilfully swung himself onto the steps of the last coach; but the stout man caught his coat and plucked him off like a ripe peach.

"You saved my life," said the stout man, grinning. "Allow me to save yours."

And the train disappeared round the curve. —*Pickup.*

THE MODEST MALE

"Did any of your family ever make a brilliant marriage?"

"Only my wife."—*Boston Transcript.*

THE OLD ONES ARE THE BEST

A visitor from the United States had been imbibing well, if not wisely, in Quebec. He happened to pass the church on which were twelve large bronze statues, representing the twelve apostles. A small fire close by, and the ringing of fire-engine bells confused him. He ran forward, looking up at the statues, and shouted: "Don't jump, boys, the firemen will be here in a minute with the nets."

STILL GOING STRONG

"How long did it take your wife to learn to drive?"

"It will be ten years in September."—*The Passing Show (London).*

EACH MAN'S SHARE

A doctor, an architect and a bolshevik were discussing as to the priority of their occupations.

The doctor said:

"When Adam's side was opened and a rib removed to make woman, there was a surgical operation—medicine was the oldest trade."

The architect said:

"Yes, but when the earth was made, out of chaos, there was the building process, the use of materials according to a plan. The architect's is still older."

The bolshevik smiled and said:

"But who supplied the chaos?"—*Farm Life.*

How Textile Fibres Affect Health Features of Knit Underwear

Wool fibre is warm because of its kinky, resilient nature. It creates a fluffy knitted fabric filled with air which conserves the heat of the body, yet allows ventilation. Wool fibre is most absorbent—it takes up perspiration quickly and allows gradual evaporation.

Cotton fibre, being a good conductor of heat, makes ideal medium and light weight knitted garments. Fleecing and other methods make it fluffy and warm for winter garments. Bleached cotton is much more absorbent and dries more quickly than raw cotton. It is, therefore, especially desirable for wear in hot weather. In all seasons, cotton knit underwear absorbs perspiration rapidly and keeps the body dry and comfortable.

Silk fibre, though very light in weight, is a poor conductor of heat. Either alone, or combined with wool, it makes warm winter garments. In sheer knitted fabrics, silk is cool for summer wear. It is by nature very absorbent and it dries very quickly. For the latter reason, it is frequently combined with wool.

There's a fabric, style and weight of knit underwear for any climate—to suit every age in every occupation.

Send for—First Principles of Underwear and Health—a health message to you and your family.

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